GLOBAL VACCINE ACTION PLAN

REGIONAL REPORTS ON PROGRESS TOWARDS GVAP RVAP GOALS

ANNEX TO THE GVAP SECRETARIAT ANNUAL REPORT 2018

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FOREWORD

In its Global Vaccine Action Plan (GVAP) Assessment Report 2015, the Strategic Group of Experts on Immunization (SAGE) made the recommendation that "WHO Regional Directors should make sure the progress towards the Global and Regional Vaccine Actions Plans is reviewed annually at Regional Committee meetings as requested in the WHA resolution WHA65.17. Reports prepared at the country level to review and discuss the progress made should be the basis of the discussion." As part of this process, WHO Regional Offices provide annually a report on the progress made towards the achievement of the GVAP and the Regional Vaccine Actions Plans goals[1]. The reports summarize the main issues, challenges, successes and opportunities for countries in each respective region in 2017.

The six regional progress reports are published in this annex.

[1] http://www.who.int/immunization/global_vaccine_action_plan/en/

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Progress Report for the African Region

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BACKGROUND

The Africa Regional Strategic Plan for Immunization 2014-2020 (RSPI) was adopted in 2014 by the 64th session of the WHO Regional Committee for Africa with the goal of achieving universal immunization coverage and reducing mortality and morbidity from vaccine preventable diseases (VPD) within the WHO African Region by the end of 2020. The plan was developed in line with the Global Vaccine Action Plan 2011-2020 which was approved by the World Health Assembly in 2012, which aims to prevent millions of deaths by the end of the **Decade of Vaccines** in 2020.

In January 2017, Heads of State from across Africa signed the Addis Declaration on Immunization (ADI) and committed to ensuring that everyone in Africa, no matter who they are or where they live, can access equitably all the required vaccines. Furthermore, it emphasized a needed shift in population's perception of the benefits of and entitlements to immunization, moving from expressing demands for these products rather than accepting offers extended to them by service providers. The intent underlying this shift is to cast immunization as a component of the human right to health, thereby setting obligations to be met by the state towards its people. The ADI is recognised as a political and advocacy instrument which can be used to support the implementation of the RSPI at the highest level of government. This commitment by African Heads of State is leveraged by implementing the declaration's roadmap and taking into account the current state of immunization in the African region.

This progress report highlights the achievements made in expanding access to vaccines in the WHO African Region and concentrates on outcome of the independent mid-term evaluation of the RSPI which was conducted in Q4-2017. The purpose of the independent mid-term review was to evaluate achievements, identify bottlenecks, review level of ownership, allocation of resources, integration of services and equity of service provisions, assess coordination of stakeholders, as well as to make recommendations to support the Region in achieving its RSPI targets.

AFRICA REGIONAL STRATEGIC PLAN ON IMMUNIZATION (RSPI) 2014-2020 OBJECTIVES & TARGETS

The RSPI aims to ensure that the goal to provide universal immunization coverage within the WHO African Region is achieved as part of the broader Sustainable Development Goals (SDGs) sanctioned effort to achieve Universal Health Coverage (UHC). The plan includes strategic objectives, milestones and targets, and strategic directions.

The **strategic objectives** reflect the expected outcomes and impacts of the strategy against milestones and targets whilst the **strategic directions** are the enabling factors which need to be in place in order for countries to achieve the objectives.

RSPI STRATEGIC OBJECTIVES (SOS)

RSPI Strategic Objective 1: Improve immunization coverage beyond the current levels

Table 1 Progress of Strategic Objective 1 against RSPI 2017 milestones

NO	2016 - 2017 milestone	Status
SO 1.1	Coverage of pentavalent 3 and MCV1 vaccines will have reached 90% nationally in at least 25 countries	20 & 16 /25
SO 1.2	40 countries will have introduced the pneumococcal conjugate vaccine (PCV)	39/40
SO 1.3	30 countries will have introduced the rotavirus vaccine	32/30
SO 1.4	25 countries will have introduced the HPV vaccine	6/25
SO 1.5	25 countries will regularly report AEFI of at least 10/100,000 surviving infants, and at least 50% of these events will be investigated and reported to national authorities within 2 weeks of occurrence	22/25
SO 1.6	Fewer than 10 countries will be reporting one or more stock-outs of vaccines or supplies lasting more than one week	16/47
SO 1.7	40 countries will have a NITAG	26/40
SO 1.8	At least 25 countries will have a functioning NRA	N/A

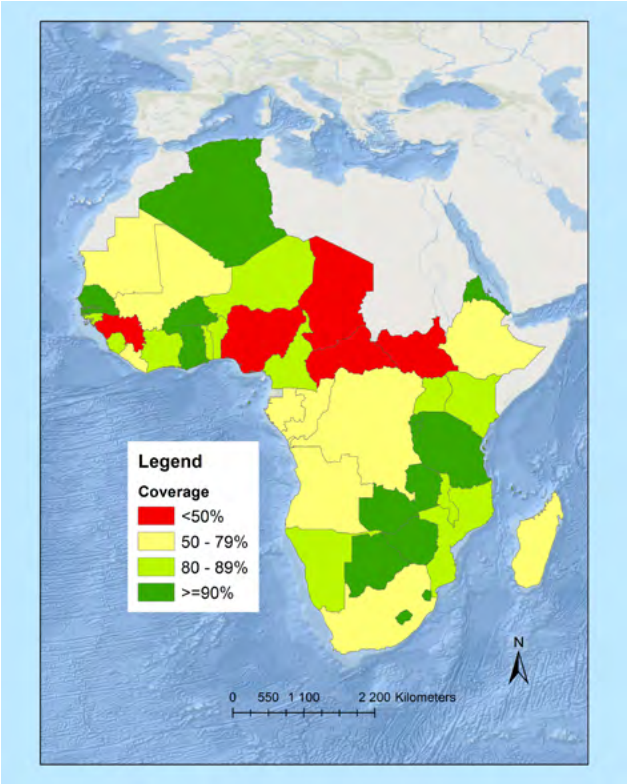
As is noted in Table 1, only 20 and 16 of the targeted 25 countries reached the RSPI 90% **coverage target** of Penta3 and MCV1 vaccines respectively. Twenty countries in 2017 achieved the RSPI coverage target of >90% for DTP3 containing-vaccine, an increase from the 17 countries in 2015. Sixteen countries in 2017 achieved the MCV1 coverage of at least 90%, one additional country from the 15 countries in 2015. The region's coverage for DTP3, Oral Polio Vaccine (OPV3) and MCV1 stagnated at approximately 72%, 71% and 70% respectively. This is largely due to low coverage in the three largest countries[2] responsible for 38% of the total regional birth cohort. Contextual factors which negatively influenced coverage include multiple competing developmental priorities, gaps in country ownership, lack of community engagement, insecurity, low data reliability and practical use, limited logistics capacity, inadequate and uneven distribution of the workforce, and weak health systems aggravated by disease outbreaks in various countries like the Ebola Virus Disease, yellow fever, meningococcal meningitis, cholera, etc.

[2] DRC, Ethiopia and Nigeria

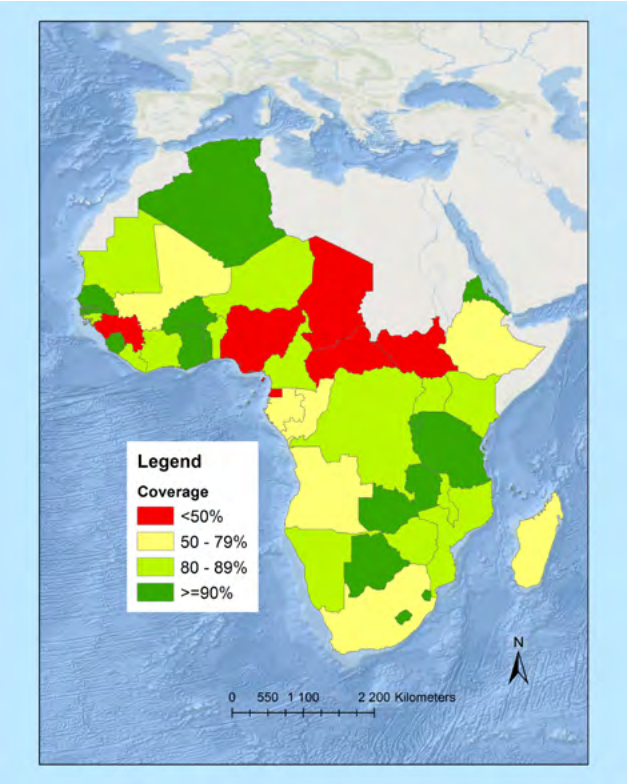
Figure 1: DTP3 and MCV1 coverage per country, 2016-2017 (WUENIC)

DPT3

2016

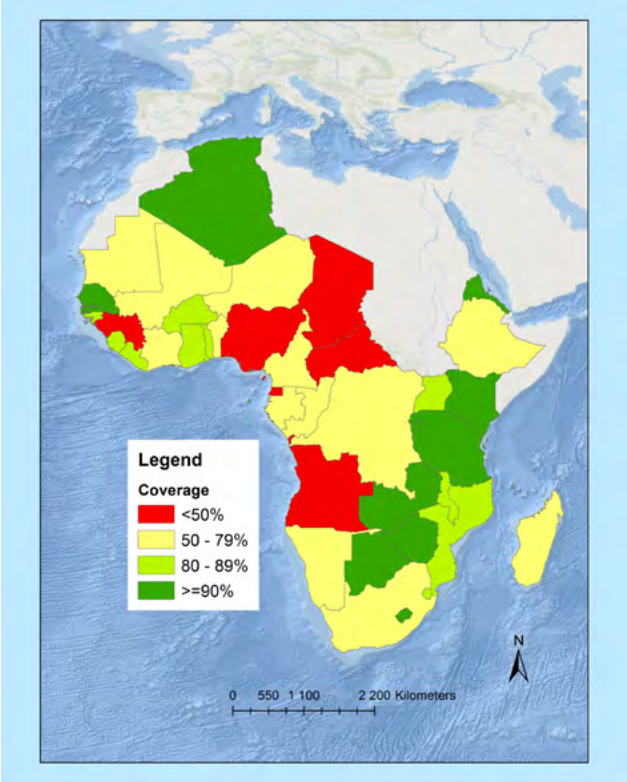


2017

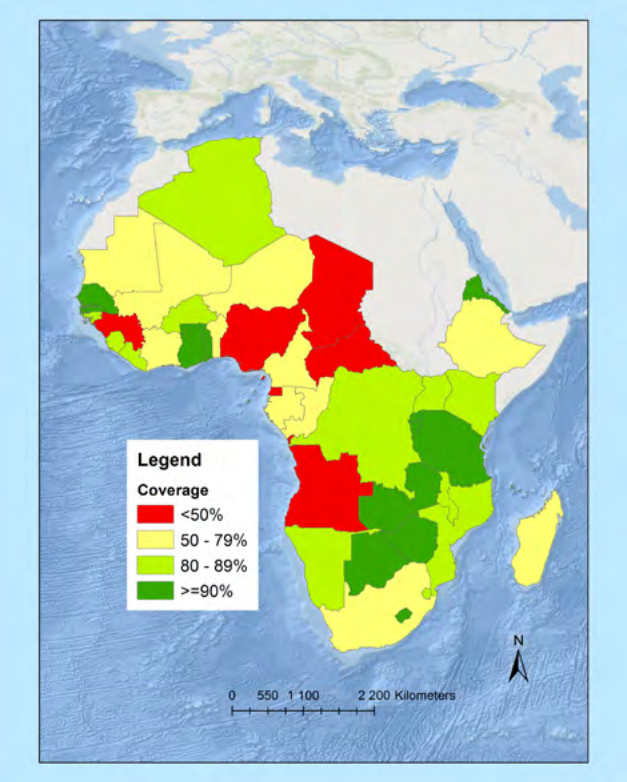


MCV1

2016



2017



Source: WUENIC 2017 released in July 2018

Figure 2: Progress of DTP3 and MCV1 coverage per country, 2013-2017 (WUENIC)

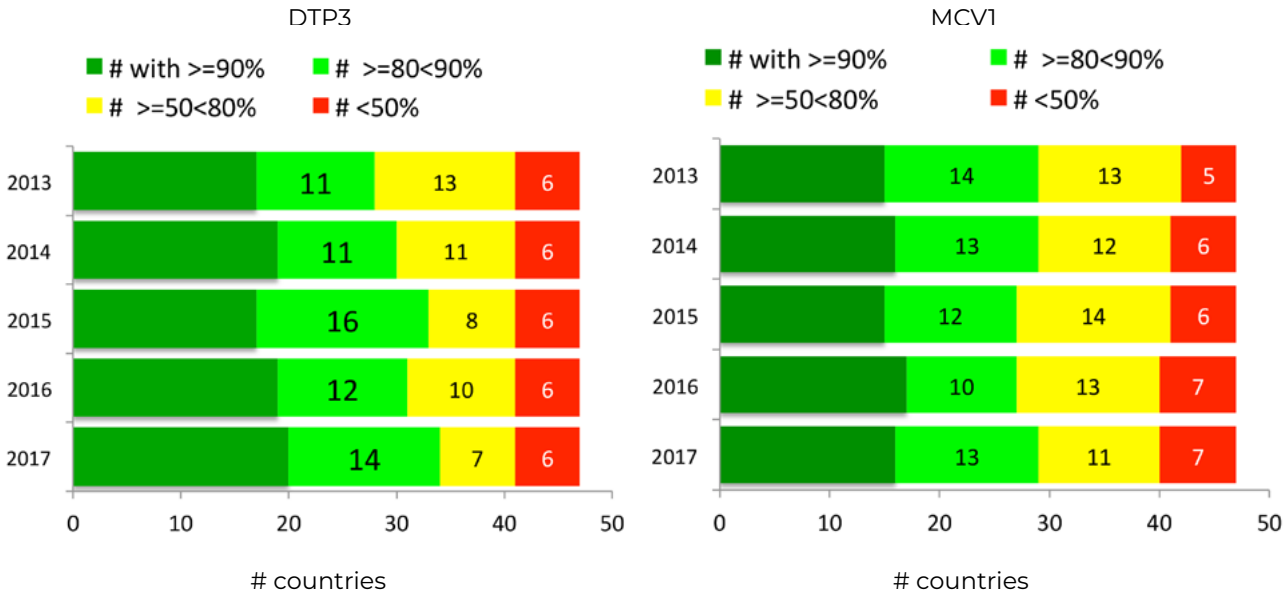
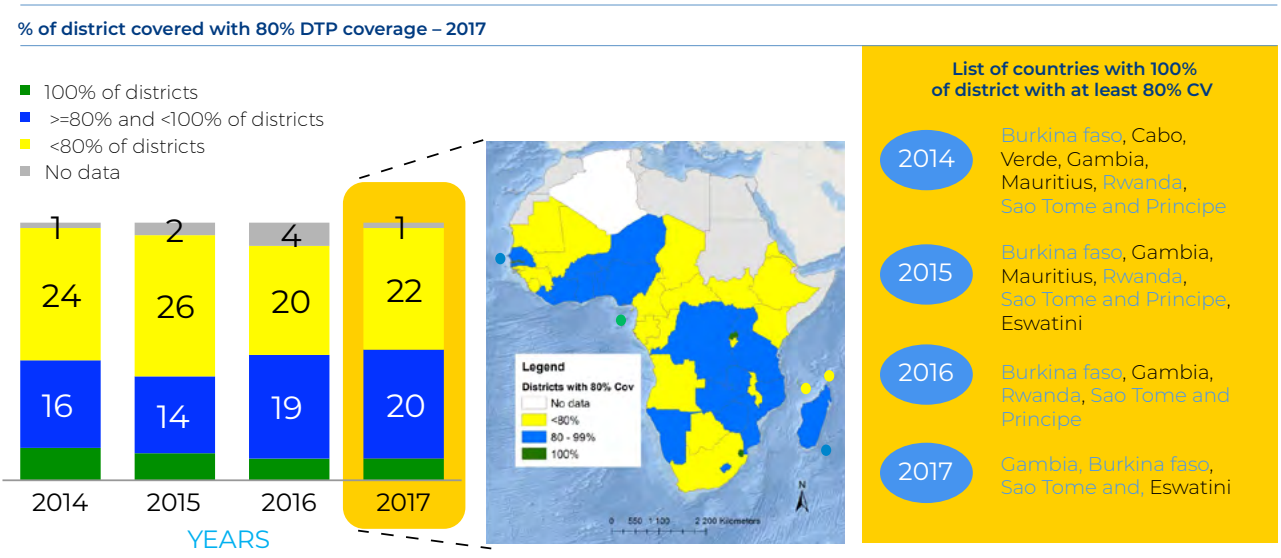


Figure 3: Routine immunization coverage levels & % of districts with at least 80% DTP3 coverage

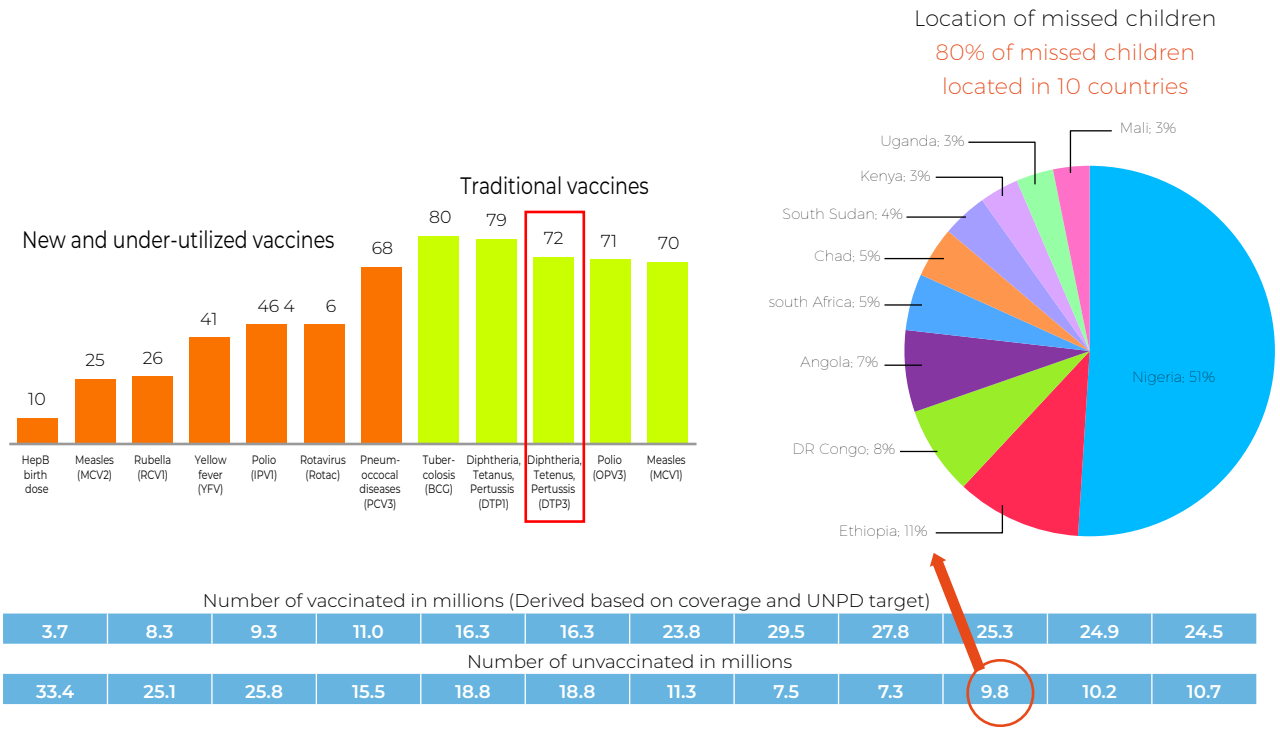


Sources: JRF 2017 (as of July 2018)

Targets for the **introduction of new vaccines** [pneumococcal conjugate vaccine (PCV) and rotavirus] have almost been met and vaccine impact could be demonstrated in several studies. Only six of the targeted 25 countries have however introduced the HPV vaccine. Countries are experiencing challenges in selecting appropriate HPV delivery strategy methods, with school-based implementation shown to be very expensive. Further, the estimation of the denominator of targeted girls is problematic (specifically out-of-school girls), and reaching these out-of-school girls proves difficult. Overall, there is limited public knowledge of HPV vaccines; there are some issues with private schools, and parents questioning the non-vaccination of boys. Low HPV introduction rates are thus a combination of poor demand in some instances, barriers in accessing eligible girls, high vaccine prices outside of the Gavi realm, and global supply constraints - expected to continue until 2019.

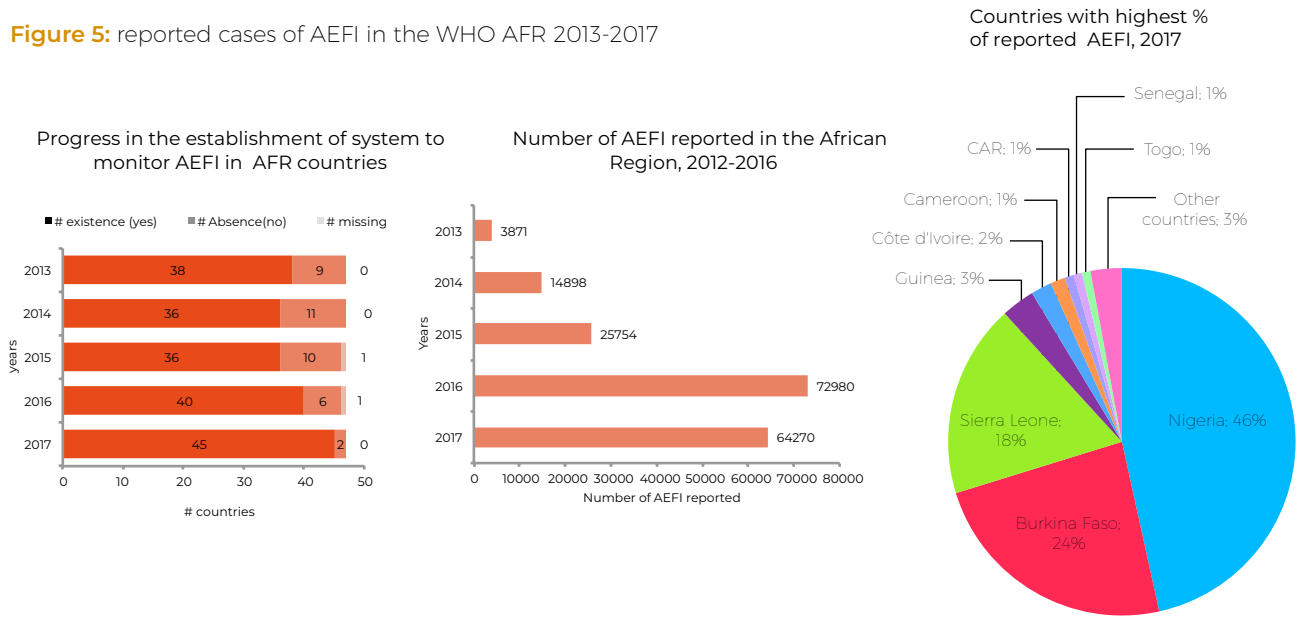
Despite the successes in introducing those key life-saving vaccines, VPDs still account for the death of more than half a million children under five years of age every year in Africa – representing 56% of global VPD-related deaths. Yet, the majority of these VPDs can be prevented by PCV and rotavirus vaccines, if introduced by all the countries. Some challenges regarding new vaccine introductions include cold chain and vaccine management (including vaccine supply) resulting in not offering vaccines on a daily basis, insufficient efforts or capacity to associate vaccines with strengthening of case management and to reduce missed opportunities for vaccination and affordability of vaccines in countries not supported by Gavi.

Figure 4: Regional immunization coverage, vaccinated and missed children, AFR 2017



Forty countries reported having a system to monitor **adverse events following immunization** (AEFI) with 37 countries actually reporting them in 2016, albeit several of them still requiring substantial improvements before having in place a fully functional system. Twenty-two countries reported a minimum of 10 AEFI per 100 000 surviving infants in 2016. Approximately 73,000 AEFI were reported between 2012 and 2016, much below the expected number and primarily from six countries[3]. Rotavirus vaccine (intussusception) safety monitoring is ongoing in 12 countries and preliminary findings are reassuring.

Figure 5: reported cases of AEFI in the WHO AFR 2013-2017



In 2016, 16 countries **reported vaccine stock outs** of BCG, MCV and/or pentavalent vaccines lasting more than one week at the district level, failing to meet the target of fewer than 10 countries reporting such stock-outs. Based on the reported data, in 9 countries such stock-outs led to the interruption of vaccination sessions for some antigens; it should be noted that the quality of sub-national stock level data is problematic. The main reasons for stock-outs were operational funding delays at the district level, followed by global shortages, product registration issues, deficient forecast and procurement delays.

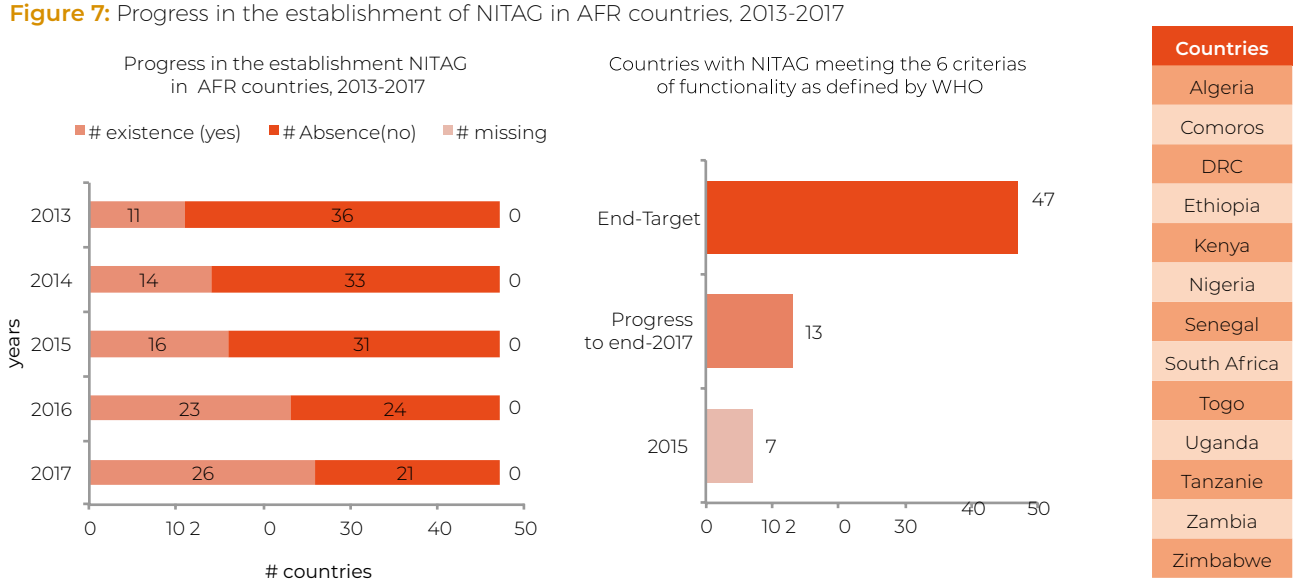
[3] Burkina Faso, Cameroon, Cote d'Ivoire, DRC, Nigeria and Sierra Leone

Figure 6: In depth stock out analysis for selected vaccines, AFR 2016-2017

Vaccine	Year	# countries with vaccine stock out at national level	Duration	# countries with vaccine stock out at district level	# countries where district stock out is linked to national stock out	# countries with vaccination session interruption due to stock out of vaccine
BCG	2016	9	1-5 months (Eswatini)	11	7	6
	2017	12	15 days-5 months (chad)	14	10	11
DTP_HepB_Hib	2016	3	1 month	8	3	3
	2017	1	3 months	2	0	2
MCV	2016	4	1 week to 3 months (Eswatini)	6	2	3
	2017	4	1 to 3 months (Cameroon)	6	3	6

Twenty-three countries have established a **National Immunization Technical Advisory Group (NITAG)** of which 13 meet the WHO criteria for a functional NITAG. Whilst having a **National Regulatory Authority (NRA)** is an RSPI indicator, a fully functioning NRA is not necessarily critically important for all countries, except for those manufacturing vaccines; hence this indicator is being revised. Twenty-four countries NRA's have authorized clinical trials and provide relevant oversight.

Figure 7: Progress in the establishment of NITAG in AFR countries, 2013-2017



Sources: JRF 2017, as of July 2018

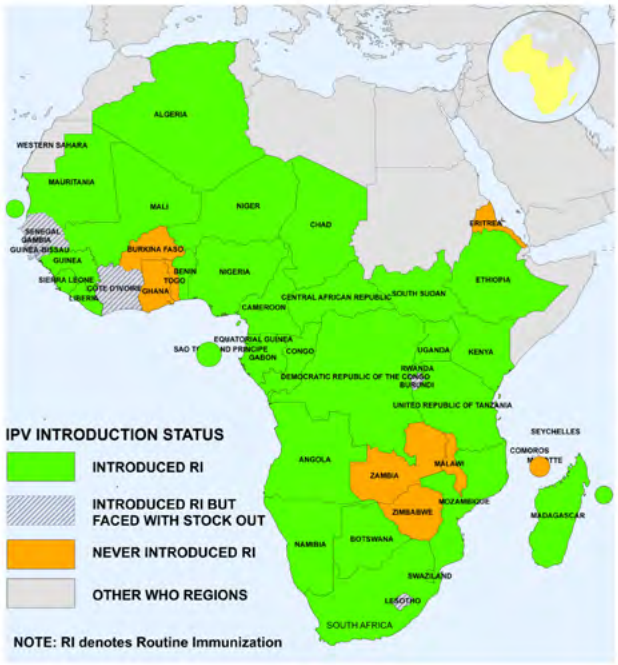
RSPI Strategic Objective 2: Complete the interruption of wild poliovirus transmission and ensure virus containment

Table 2: Progress of Strategic Objective 2 against RSPI 2017 milestones

N0	2016 - 2017 milestone	Status
SO 2.1	All countries will have implemented measures for containment of wild polioviruses and cVDPVs	40/47
SO 2.2	All countries using OPV will have introduced at least one dose of IPV	34/47
SO 2.3	OPV type 2 will have been withdrawn	47/47
SO 2.4	At least a 10% annual increase in DTP3 coverage will be achieved in 80% of the high-risk districts for all 6 focus countries	0/6

The region has made substantial progress towards the eradication of poliomyelitis. It reported 128 wild poliovirus (WPV) cases in 2012 – more than half of the global burden – and only four cases in 2016 from an earlier undetected wild virus circulation in northern Nigeria. Since August 2016 no new case of WPV has been confirmed. Interventions which led to this renewed success include improving the quality of polio supplemental immunization activities, strengthening acute flaccid paralysis (AFP) surveillance, timely response to polio outbreaks and strengthening routine immunization, and the introduction of IPV.

Figure 8: Status of IPV introduction, May 2017 [Source: GPEI and Routine Immunization in Figures, African Region 2012-2016 (2017)]



Progress against the 2016–2017 milestones however is limited. These milestones were developed when assumptions regarding the polio eradication timeline were more optimistic. Phase 1a **containment** refers to the documentation of destroying wild polio viruses (WPV) and circulating vaccine-derived polio viruses (cVDPV) in all laboratories, whilst Phase 1b relies on the destruction of all OPV2-containing vaccines. The region has failed to meet this target, given that some national research laboratories are still reluctant to destroy all of their specimens. As a result of the global vaccine shortage, countries have not met the target for **IPV introductions** (Figure 8). Whilst supply should improve by 2018, IPV supply delays have created susceptible populations. In this context, countries require further global coordination and guidance on IPV introduction and on the potential use of fractional dose of IPV (fIPV). Further, poor routine immunization coverage in some countries has resulted in cases of cVDPVs, as a result of persisting insufficient coverage of OPV1+3 in spite of widespread IPV use.

Whilst the **OPV type 2** withdrawal target was met, with all countries switching to bivalent OPV1+3 (bOPV) in a synchronized manner in Q2/2016, there was reintroduction of monovalent type 2 (mOPV2) into countries in response to the cVDPV2 occurrence. Further there is documented evidence of some mismanagement of mOPV2 stocks, and similarly, trivalent OPV (tOPV) that should have been destroyed following the switch to bOPV is still in circulation in limited areas. Stock audits are now being performed in selected countries.

The discovery of uninterrupted transmission of WPV1 in North-Eastern Nigeria in August 2016, in an area where indicators pointed towards good surveillance, has raised concerns as to whether virus transmission is being missed despite surveillance indicators apparently being met and what the implications are for sustaining zero transmission. Despite the fact that more than 12 months have passed since the last WPV1 case in Africa, the polio AFP surveillance indicators show persistent gaps in surveillance, often masked by reliance on district averages masking differentials across wards within districts. Challenges for polio eradication in the region are primarily linked to the insecurity affecting several areas that prevents a regular performance of immunization activities and affects the quality of surveillance with resulting severe gaps in data quality and low population immunity. The latter is also due to weak routine immunization systems performance. Discussions are being held with governments in eight[4] priority countries in order to mitigate risks associated with the ramp down of polio support with asset mapping being performed.

The GPEI transition has been designed to minimize risks by maintaining funding for the high-risk Lake Chad basin and marginally increasing funding for polio surveillance for all countries in the build-up to certification. The ramp down of polio investments does however present a risk for routine immunization and VPD surveillance. Despite the fact that the Polio Eradication and Endgame Strategic Plan 2013–2018 calls on countries to *"strengthen routine immunization"* and the significant investments in polio eradication, these efforts may not be contributing to improved routine coverage, but may have even had a counter-effect as polio alters the perceptions of how individuals feel they should receive vaccines e.g. believing it should come to them rather than being accessed through routine, facility-based routine services.

None of the six[5] focus countries have reached the **10% increase in DTP3/Pentavalent3** coverage target. There is some evidence of coverage data misrepresentation in some countries and management action is being taken in these instances.

[4] Angola, Cameroon, CAR, Chad, DRC, Ethiopia, Nigeria and South Sudan

[5] Angola, Chad, DRC, Ethiopia, Nigeria and South Sudan

RSPI Strategic Objective 3: To eliminate measles and advocate for the elimination of rubella and congenital rubella syndrome

Table 3 Progress of Strategic Objective 3 against RSPI 2017 milestones

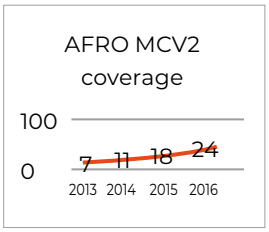
NO	2016 - 2017 milestone	Status
SO 3.1	MCV1 coverage will have reached at least 95% nationally in at least 25 countries	8/25
SO 3.2	MCV1 SIA coverage will be at least 95% in every district	4/42 SIAs
SO 3.3	At least 15 countries will have introduced the rubella-containing vaccine in routine EPI	20/15
SO 3.4	At least 28 countries will have introduced the MCV2 vaccine in routine EPI	26/28

The region failed to reach **national coverage targets for Measles-Containing Vaccine** (MCV1). Nigeria, Ethiopia and The Democratic Republic of the Congo (DRC) are home to 50% of the children not receiving MCV1. Only six countries have MCV1 coverage of at least 95% required to sustain interrupted transmission, down from nine countries in 2013, and far from the target of 25 countries. Despite significant progress between 2001 and 2009 for MCV1 coverage rates (54% to 72%), MCV1 coverage levels in the region have now stagnated between 71% and 74%[6] and it is highly unlikely that the region will meet the target for elimination of measles by 2020.

Between 2012–2016, 393 million children were vaccinated in 43 Member states through **Supplementary Immunization Activities** (SIAs)[7]. SIAs are taking place every year in 16–18 countries and a total of 42 SIAs have been done since 2014; however only five of 18 post-campaign coverage surveys have shown ≥95% coverage and only four SIAs have reached 100% of districts with ≥95% coverage, raising questions about the appropriate planning and preparation of those activities.

Although 20 countries have **introduced rubella-containing vaccine (RCV)** in SIAs and routine EPI, exceeding the target, overall coverage in the region remains low. The disease is not well recognised and often does not have a local name but is rather categorized as a fever and rash. As a result, it has been challenging to sensitize programmes to collect the data necessary to consider it as a new vaccine.

Twenty-six countries in the region have **introduced MCV2** in their National Immunization Programmes (NIP). The WHO Position Paper was recently updated resulting in a revision of the Gavi policy and the removal of the MCV1 coverage threshold restrictions for introductions. Furthermore, in 2015, Gavi approved broader support[8] for measles and rubella vaccine, which should facilitate more introductions of MCV2. Regional coverage levels for this vaccine are however very low at 24%[9].



Twenty countries met the core **measles surveillance** indicators[10]. There is a shortage of operational funding for this surveillance including laboratory support. The measles laboratory network relies heavily on the polio infrastructure for performing case-based surveillance, which now also includes Yellow Fever. The GPEI ramp down is thus threatening progress against the control and elimination of these diseases.

By end of 2016, 13 countries[11] were nearing measles elimination; 9 countries[12] were on track for measles elimination by 2020, while 25 countries were at risk of not achieving the elimination goal. Major factors which impeded progress include: failure to improve routine immunization coverage levels, insecurity in some Member States, delays in partner and local funding for SIAs, and failure to achieve the targeted SIAs coverage at national level and/or subnational levels. These factors were compounded by inaccurate population denominators.

[6] Mid-Term Review of the status of Measles Elimination by 2020

[7] Global Vaccine Action Plan – Annex to the GVAP Secretariat Annual Report 2016: Progress Report for the African Region

[8] Gavi support now extends to cover: the first dose of MR vaccine, the second dose of MR or Measles vaccine, SIAs in all Gavi eligible countries, outbreak response

[9] Routine Immunization in Figures, African Region 2012 – 2016 (2017)

[10] Non measles febrile rash illness rate and % districts reporting ≥1 suspected case with blood specimens

[11] Algeria, Cape Verde, Eritrea, Eswatini, Ghana, Lesotho, Mauritius, Namibia, Rwanda, Sao Tome and Principe, Seychelles,Tanzania and Zimbabwe

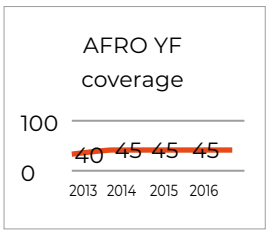
[12] Botswana, Cameroon, Comoros, Cote d'Ivoire, Kenya, Malawi, Mozambique, Uganda and Zambia

RSPI Strategic Objective 4: Attain and sustain elimination/control of other vaccine preventable diseases

Table 4 Progress of Strategic Objective 4 against RSPI 2017 milestones

N0	2016 - 2017 milestone	Status
SO 4.1	42 countries will have achieved and validated the elimination of maternal and neonatal tetanus	38/42
SO 4.2	31 countries at risk for yellow fever will have introduced the yellow fever vaccine, and 10 countries will have achieved more than 90% coverage with the vaccine	22/31 introduced. 1/10 >90% coverage.
SO 4.3	All countries within the meningitis belt will have introduced MenAfriVAC© through campaigns and five of them will have introduced through routine immunization	20/25 4/5
SO 4.4	Sero-prevalence of HbsAg among children under five will not be higher than 2% in at least 20 countries	**Data not available**

Thirty-eight countries have validated **maternal and neonatal tetanus (MNT) elimination**, however elimination by 2020 is at risk due to two priority countries: Central African Republic and South Sudan. Conflict and geographic accessibility compromise the provision of consistent quality services in remote districts. As a result low performing districts compromise the validation of MNT elimination for the whole country. The programme faces challenges in mobilizing partnerships and resources as donors appear not to sufficiently prioritize this work, although it is an issue which disproportionally affects remote, underserved and poor populations. Eighteen countries are now using Tetanus-Diphtheria vaccine (Td) instead of Tetanus Toxoid (TT) for children ≥ 4 years of age and for women of childbearing age and the new WHO position papers on Tetanus and Diphtheria are calling for a more widespread implementation of this product switch, including use in pre-school and school platforms.



An epidemiological analysis of age- and location-specific data on recent diphtheria outbreaks has not been performed, although it could help understand the dynamics of the spread of diphtheria and inform about gaps in immunization coverage with the aim of adapting local vaccination schedules.

Twenty-two of the targeted 31 countries have **introduced the Yellow Fever (YF) vaccine in routine immunization.** The global supply situation remains problematic affecting the ability of scaling up routine immunization and stock-outs of vaccine occurred in 10 countries in 2016. As a result, 11 countries have low immunization coverage (<70%), six countries have moderate coverage (70-80%), there is no yellow fever vaccine in routine immunization in nine at-risk countries and only one country is achieving >90% coverage. MCV1 and YF vaccines are delivered simultaneously but there is a significant difference in coverage between the two vaccines, particularly in Burkina Faso, Chad, Congo and DRC, partly due to vaccine shortages. Coverage in the region has stagnated at 45% and there is an apparent shift of disease burden from West Africa to Central and East Africa. Because of the supply problems, recent large outbreaks in Angola and DRC necessitated the use of fractional dosing, without major implementation issues.

The strategy to **introduce MenAfriVAC** vaccine against meningococcal meningitis group A involved an initial mass campaign for ages 1–29 years. Twenty of the targeted 25 countries have conducted these campaigns, and four of the targeted five countries have introduced the vaccine in their routine immunization programmes. Routine introduction has often been delayed due to the time required to obtain countries' regulatory approval for use in infants. Whilst studies have documented that the disease burden of meningitis due to group A meningococcal meningitis has substantially decreased, increasingly there are outbreaks caused by other serogroups (e.g. serogroup C in Nigeria). Irrespective of the fact that,

at the moment, there is no documented evidence of serogroup replacement, an affordable multivalent conjugate[13] vaccine is needed to reduce the risk of meningococcal outbreaks in the region.

Most countries have not yet introduced the recommended Hepatitis B vaccine birth dose, largely because Hepatitis B vaccine is included in the pentavalent vaccine and there is little appetite to introduce a separate monovalent vaccine. Transmission from mother to child is likely still occurring. Unfortunately, data on the **sero-prevalence of HbsAg** among children under five is not systematically available, and thus progress against this indicator cannot be measured at this time. Furthermore, the absence of the appropriate evidence is an obstacle for the implementation of targeted advocacy efforts.

RSPI STRATEGIC DIRECTIONS (SDS)

The Strategic Directions, as laid out in the **RSPI**, serve to frame the processes required for the achievement of the Strategic Objectives. These "enabling factors" need to be in place in order for countries to achieve the objectives, hence if the Strategic Directions are not in place, it is not surprising that the Strategic Objectives are not being met.

RSPI Strategic Direction 1: All countries commit to immunization as a priority

Table 5 Progress of Strategic Direction 1 against RSPI 2017 milestones

N0	2016 - 2017 milestone	Status
SD 1.1	Population-based surveys will indicate the public perception of the value of immunization as positive for 70% of those surveyed	**On track**
SD 1.2	25 countries will have completed a review of their policies, laws, and regulations in support of immunization	**15/25**
SD 1.3	At least 35 countries will have constituted a national stakeholder consultation forum on immunization	**3/35**
SD 1.4	All countries will have conducted a mid-term review of their accomplishments, shortcomings, and evolving needs and capacity, and adjusted their multi-year plans accordingly	**41/47**

The region appears to be on track for the conduction of **population-based surveys** where over 70% of those surveys found that the general population see value in vaccines. However, the quality of some of these surveys is limited; they do not always capture the same information and the data from different surveys are not systematically collected and analysed or used to inform implementation and policies. Countries face several challenges in measuring demand for immunization, such as lack of financing, lack of human resources and lack of knowledge on how to conduct appropriate surveys, as well as the fact that implementation research is often down-prioritised. Studies conducted to understand public perception include among others: vaccine perception for polio vaccine (Nigeria); reasons for late notifications of AFP (Angola), community action to identify reasons for vaccine refusal (Kenya); HPV acceptability in sub-Saharan African; and missed opportunities for vaccination (Malawi, Chad, Kenya, DRC and Nigeria).

Fifteen[14] of the targeted 25 countries completed a formal **review and revision of their policies, laws and regulations** in support of immunization. In six countries national immunization policies are under development or revision. In 26[15] countries, no such revisions are planned or information on this indicator is limited. This may be an overlooked area: not every immunization programme may feel empowered to stimulate the process for change if and when important.

[13] Conjugate multivalent vaccines exist in the market but those are not supported by Gavi and have prices too high for the countries in the region. Polysaccharide vaccines are available at affordable prices but are only suitable for outbreak response, not protecting children and providing only short-lasting immunity.

[14] Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Comoros, Eswatini, Guinea, Madagascar, Malawi, Niger, Nigeria, Seychelles and Uganda

[15] CAR, Chad, Congo, Cote d'Ivoire, DRC and Liberia

Three[16] of the 35 targeted countries convened **a national stakeholder consultation forum on immunization.** Whilst many immunization-related forums exist (e.g. ICCs, NITAGs and polio transition meetings) the participation and scope of discussions at these forums is not known, making it difficult to assess whether they can be considered to be a broad stakeholder consultation. With the ADI Roadmap in place, it is anticipated that member states will hold and report on regular immunization forums including all stakeholders. Existing stakeholder meetings such as ICCs or Joint Program Appraisals could be leveraged to have such a discussion.

Mid-term reviews have been conducted in 41 countries between 2012 and 2017 and most countries now have valid comprehensive multi-year plans (cMYPs) on immunization. In almost all countries an annual internal review of the immunization programme is conducted to assess the status of implementation and to develop the plan for the next year including updating the cMYP, taking into account results from periodic assessments e.g. Joint Programme Appraisals, EPI reviews and post-introduction evaluations (PIEs).

Midway through the 2014–2020 RSPI, the Ministerial Convference on Immunization in Africa was held in Addis Ababa in 2016, convened all African leaders and global partners around the GVAP and RSPI. The meeting concluded with the Addis Declaration on Immunization (ADI) which was endorsed by the Heads of States at the African Union Summit in January 2017. The ADI Roadmap, launched at the WHO African Health Forum in Rwanda in June 2017 is an instrument to be leveraged to accelerate the implementation of the RSPI and to ensure immunization is a priority in each country. In order to achieve Strategic Direction 1, the **ADI roadmap** is to be implemented with a strong focus on advocacy, communication and monitoring.

RSPI Strategic Direction 2: Individuals and communities understand the value of vaccines and demand immunization as both their right and responsibility

Table 6 Progress of Strategic Direction 2 against RSPI 2017 milestones

N0	2016 - 2017 milestone	Status
SD 2.1	A strategy for stimulating community demand for immunization will have been developed, implemented and tested in 10 countries	**9/10**
SD 2.2	Trends in community demand for immunization will have been evaluated in at least 10 countries where focused projects will have been implemented	**No data**

Guidance material, initiated by UNICEF and WHO, was developed[17] to assist programme managers to better understand how to generate demand for immunization. This guideline was tested in nine West and Central African countries[18]. Further studies are underway exploring issues affecting demand creation; as well as investigations into assessments of demand at the individual, household and community levels; attempts to engage communities with specific emphasis on male involvement; and improving immunization processes e.g. through the provision of household incentives. Gavi is also providing support to a network of Civil Society Organizations (CSOs) working to mobilize demand. No data are yet available to report on evaluations of **trends of community demand**.

The indicators measured do not capture how demand and the rights of communities (with particular relevance to the human right to health and to the Convention on the Rights of the Child) will be measured. Casting immunization as a right, as made explicit in the RSPI and the GVAP has the dual advantage of acknowledging government obligations and adding monitoring mechanisms through the human rights international treaty monitoring bodies.

[16] Benin, Guinea and Niger

[17] "Positioning Demand Generation in national EPI planning and implementation processes: A quick guide to assist immunization and communication planners and managers" initiated by UNICEF WCARO, WHO AFRO and UNICEF ESARO

[18] Cape Verde, CAR, Chad, DRC, Equatorial Guinea, Guinea Bissau, Mali, Niger and Sierra Leone

RSPI Strategic Direction 3: The benefits of immunization are equitably extended to all people

Table 6 Progress of Strategic Direction 3 against RSPI 2017 milestones

N0	2016 - 2017 milestone	Status
SD 3.1	35 countries will have developed and implemented a microplanning approach to reach every community and every individual eligible for immunization	**34 countries have microplans in all districts; five countries with microplans in <50% of districts**
SD 3.2	Immunization strategies in 35 countries will have incorporated specific approaches to reach new eligible populations such as older children, adolescents, young adults and the elderly	**Possibly on track in term of process with 26 MCV2, 20 MenA, six HPV introductions**

Thirty-four countries have **microplans** in all districts and five countries have microplans in up to 50% of districts. The region is thus meeting the target however these numbers do not give an indication of the quality of the plans or the implementation thereof. For example, services are often not offered every day of the week, multi-dose vials are not opened for single children, outreach services are not regularly implemented and documented, nor are periodic intensification of routine immunization (PIRI) activities and the involvement of private sector providers and NGOs.

New vaccine introduction plans formulate strategies and approaches to reach the relevant age groups beyond infancy (e.g. MCV2, Td at school entry, MenA and HPV), thus all countries that have introduced these vaccines have necessarily undertaken efforts to develop **strategies to reach the new eligible population groups.** Whilst the region may be on track for this indicator, data to reflect this progress are not routinely captured. However, proxy information is available such as MCV2 introduced in 26 countries, MenA vaccine campaigns targeting up to 29-year olds in 20 countries and national HPV introduction targeting adolescent girls in six countries.

Challenges to equitable access include primary healthcare facilities not offering immunization services, weak school health programmes, limited integration with other programmes, and missed opportunities (defined as any contact with a health service that did not result in an eligible individual receiving the needed vaccine) including those in emergency situations.

The new WHO Guide for Reaching Every District (RED) further details the approach of going equitably beyond infancy and women of child-bearing age and adopting a life cycle approach to immunization with vaccines delivered during the 2nd year of life, as boosters in childhood, to adolescents, to pregnant women and to other adults.

RSPI Strategic Direction 4: Strong immunization systems are an integral part of a well-functioning health system

Table 8 Progress of Strategic Direction 4 against RSPI 2017 milestones

N0	2016 - 2017 milestone	Status
SD 4.1	20 countries will have formulated plans to curb the burden of disease through comprehensive approaches in which immunization will or will be expected to soon play a pivotal role	**No data**
SD 4.2	On the basis of experience and lessons learned, 20 countries will have developed and adopted microplanning for integrated services supporting primary health care, including outreach options and the deployment of appropriate human, financial and logistic resources	**No data**
SD 4.3	All countries will have conducted a mid-term assessment of their surveillance systems, including the ease of access to and performance of laboratory services, and taken corrective action as appropriate	**27/47**
SD 4.4	30 countries will have established an effective case-based surveillance system for vaccine preventable diseases	**36/30**

Data for Strategic Direction 4.1 & 4.2 are not routinely captured and thus there is a risk that this Strategic Direction focuses too heavily on surveillance i.e. reactive responses and campaigns rather than strong prevention systems that reach everyone.

Some efforts have been made to **formulate plans to curb the burden of disease through comprehensive approaches** e.g. the hepatitis programme seeks to promote the use of comprehensive plans covering prevention and treatment and include immunization; HPV programmes are developing in combination with adolescent health programmes; and the integrated Global Action Plan for Pneumonia and Diarrhoea (GAPPD) has been developed, however progress at country-level is limited and little effort had been made to combine the introduction of PCV and rotavirus vaccines with early diagnosis, referral and treatment, as prescribed by this strategic guideline. Vaccines should not be expected to be sufficiently effective unless they are associated with improved clinical management.

The revised RED guidance includes updated tools and guidelines to assist countries in **microplanning for the provision of integrated services** and coordination of immunization systems with other primary health care programmes, including integrated planning to maximize resources at the higher levels of the health system.

Twenty-seven countries have conducted **mid-term assessments of their surveillance systems**. There is no consistent measure of the quality of these assessments. A surveillance system performance matrix including rotavirus and paediatric bacterial meningitis (PBM) surveillance has been established to assess overall system growth and this should be included alongside this indicator.

Thirty-six countries are reported as having robust **case-based surveillance systems** for measles, rubella/CRS, yellow fever, rotavirus and PBM, with the opportunity to include other currently or potentially vaccine preventable diseases, e.g. typhoid fever and invasive non-typhoidal salmonella. However, case-based surveillance still depends mainly on external resources and is thus at risk with the declining investments from GPEI and Gavi. Sustained high-quality surveillance is critical to monitor the impact of vaccination and generate information to inform policies and optimize strategies and will require increasing investments of domestic resources.

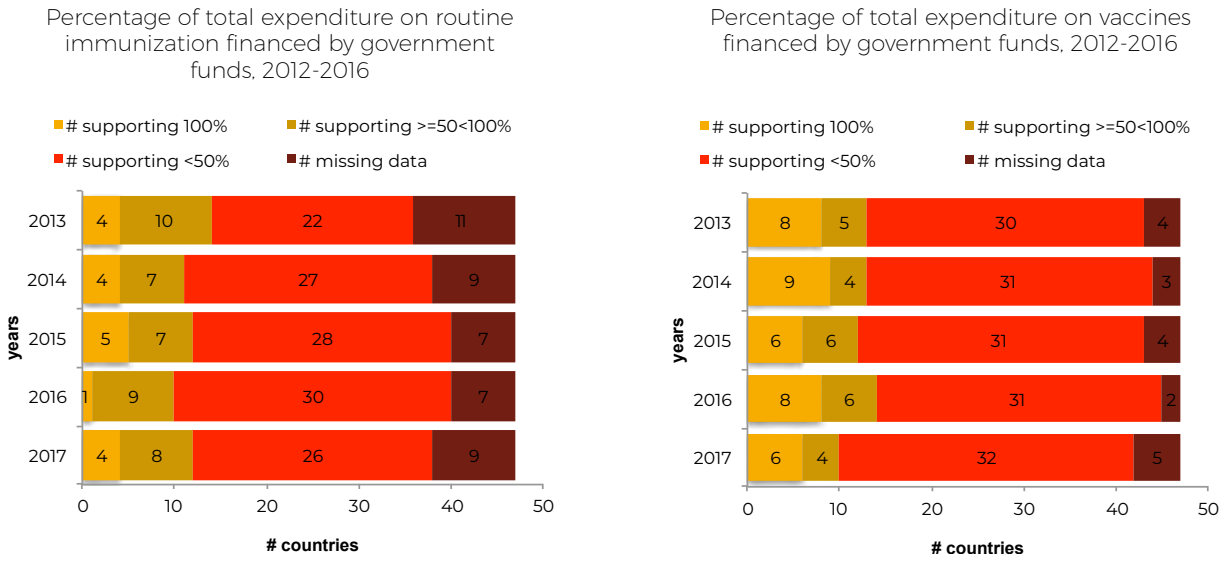
RSPI Strategic Direction 5: Immunization programmes have sustainable access to long-term funding and quality supplies

Table 9 Progress of Strategic Direction 5 against RSPI 2017 milestones

N0	2016 - 2017 milestone	Status
SD 5.1	All countries will have re-examined their expenditures, projected financial needs and funding prospects and adjusted their plans accordingly	41/47
SD 5.2	35 countries will have conducted a supply management assessment for the procurement of vaccines and other supplies; the capacity and performance of the cold chain; the needs, availability, deployment and maintenance of transportation equipment; and communication means	32/35

Forty-one of the 47 countries in the region have reviewed their budgets and adjusted their plans accordingly, and 43 countries had a line item in their national budgets for vaccines and immunization between 2014–2016. Between 2010 and 2016, the trends of government expenditure on routine immunization in the region are as follows: eleven countries show decreasing expenditures on routine immunization, while this expenditure is increasing in 29 countries and no data are available for seven countries. Government expenditure on routine immunization per live birth (population weighted average) increased from US$5.60 (2010/2011) to US$11.60 (2015/2016). Whilst this increase is encouraging, the goal is that all vaccines, including the delivery costs, are domestically financed. This is one of the ADI commitments; however there has been limited progress in allocating a specific percentage of government expenditure to routine immunization since 2010 and the region is still largely reliant on external funding sources.

Figure 9: Immunization financing by Government in AFR countries, 2013-2017



Ten countries in the region are not Gavi-eligible, 26 Gavi supported countries are in the initial self-financing phase, nine are in the preparatory transition phase and two are in the accelerated transition phase. All Gavi co-financing obligations are being met in the region, however Gavi transition support will not be flexible or extended beyond the agreed timeline, hence domestic and innovative funding resources will have to be made available to maintain progress. These innovative financing mechanisms need to be designed in the context of reported cases of misused funds in the region, resulting in the need for funds to be channelled through partners e.g. WHO and UNICEF.

Whilst the quality of the UNICEF/WHO Joint Reporting Form (JRF) data on financial information is improving, no single point of data collection exists, hence an effort is being made to utilize and report immunization expenditures using the System of Health Accounts (SHA).

Thirty-two countries have conducted **a vaccine supply management assessment** and improved their supply chains between 2014 and 2017 (43 countries since 2009), as a result of Effective Vaccine Management (EVM) assessments and resultant investments in equipment and training. However, only two countries are meeting the 80% EVM criteria related to storage capacity, maintenance, stock management and vaccine distribution. Some countries struggle to implement the EVM Improvement Plans as a result of strained financial resources, limited human resource capacity and failure to effectively utilize the guidelines and tools provided. Thirty-four countries are eligible for the Gavi Cold Chain Equipment Optimization Platform (Gavi CCEOP), of which 18 countries have been approved, 10 are in submission for review and six are not yet ready for submission of the application to Gavi. Further, the Vaccine Product, Price and Procurement (V3P) platform, established by WHO in 2014, provides price and procurement information to countries in order to support them with negotiations with manufacturers, especially middle-income countries with limited experience with price negotiations.

RSPI Strategic Direction 6: Country and regional communication, research and development innovations maximize the benefits of immunization

Table 10 Progress of Strategic Direction 6 against RSPI 2017 milestones

NO	2016 - 2017 milestone	Status
SD 6.1	At least 35 countries will have incorporated in their cMYPs an agenda for implementation research on immunization drawn up in consultation with national scientific and technical professionals, health practitioners, academics, partner organizations and members of civil society	2/35
SD 6.2	Outcomes in 10 countries from assessment and implementation research on methods to improve the quality and timely use of administrative and epidemiological data, and the expanded use of communication, monitoring and evaluation methods and technology will have resulted in a plan for improving data quality in those countries and regionally	10/10

Only two[19] countries in the region have a budget line for **implementation research** in their cMYPs. It was recommended that this indicator be reviewed in order to systematize information on research – much research is taking place but is not included in the cMYP.

Overall data quality in the region is still poor, largely linked to poor human resource capacity, limited availability of tools, and limited coordination between EPI and Health Management Information Systems (HMIS). Thirteen[20] countries have completed implementation of a standard District Health Information System (DHIS2), five[21] have had a partial roll-out and 10[22] countries are in the pilot stage and requirements for linking EPI data with DHIS2 were established in this context. In order to improve data quality, WHO training on data quality assessments for all 47 countries has been provided between 2014 and 2017 and 16 countries developed an annual data quality improvement plan (DQIP). In-depth **data quality reviews** took place in nine[23] countries.

INDEPENDENT RSPI MID-TERM EVALUATION RECOMMENDATIONS - SYNOPSIS

The independent panel identified the following six priority areas and defined related recommendations. The recommendations do not suggest the reformulation of the RSPI, but rather serve to highlight key areas that can, in the panel's view, change the trajectory of immunization in the WHO African Region.

1. Leverage the Addis Declaration on Immunization (ADI) commitments: The ADI demonstrates an unprecedented show of political commitment from the leadership of the countries in the region. Leveraging such a commitment should be the centrepiece of the future regional and national strategies as well as the main tool to ensure alignment of all partners' effort in the region to the priorities and actions endorsed by the countries. Operationally this will mean translating the commitment into allocation of funding, reinforcement and rapid deployment of trained human resources and the definition of an accountability framework that allows for each country and collectively for the regional leadership, to monitor the progress towards the agreed goals and the contribution of the various parties. A formal detailed biannual reporting on country performance on a few selected indicators can provide the basis for such accountability.
2. Define community-centred and country-specific approaches to improve equitable access: Reaching the underserved populations of the region presents one of the greatest challenges to reaching coverage targets and eliminating disease. Underserved populations are located in different settings – urban slums, nomadic and displaced populations, remote difficult-to-reach areas, neglected regions and marginalized communities – often with specific needs and requiring specific strategies. Countries are encouraged to strengthen program implementation at the community level using the revised RED guidelines; further engage CSOs to encourage social accountability; and strengthen effective vaccine management systems to ensure vaccines are continuously available, including during times of emergencies and conflicts. Countries with different degrees of health system maturity should focus on different priorities to ensure a fast progression in specific areas thus contributing to reaching the RSPI and disease control goals.
3. Foster a Universal Health Coverage approach that puts immunization at the core of primary care: The success of immunization programmes is closely linked to the functioning of the overall health system. Immunization programmes benefit from strong health systems and, conversely, specific health interventions can benefit from the high coverage generally achieved by immunization services. Each contact with a health care professional is an opportunity for vaccination, and vaccination points create opportunities to inform about, diagnose and treat other health concerns and diseases. The introduction of new vaccines beneficial to school children, adolescents and adults at specific risk creates opportunities to reach broader age groups and prevent more illness throughout the life course. Plans, objectives and accountability of a life course approach to immunization should be designed with a UHC perspective and opportunities for integration beyond immunization sought when appropriate, in accordance with the level of maturity of specific immunization programmes. The development and implementation of an integrated healthcare visit calendar for at least the first 2 years of life should form the core of such an approach.

[19] Eswatini and Uganda

[20] Burkina Faso, Ghana, Kenya, Liberia, Mozambique, Nigeria, Rwanda, Sierra Leone, Tanzania, The Gambia, Uganda, Zambia, Zimbabwe

[21] Algeria, Burundi, DRC, Malawi and South Africa

[22] Benin, Cameroon, Congo, Cote d'Ivoire, Guinea Bissau, Namibia, Niger, Senegal, South Sudan and Togo

[23] Benin, Burkina Faso, Cameroon, Eswatini, Ghana, Kenya, Mali, Nigeria and Tanzania

4. Improve availability and use of appropriate quality data for decision: Immunization programme data are a key element informing activities and strategies. Data are systematically collected and reported at the national level in all countries in the region. However, the quality of vaccine coverage estimates and other indicators remains limited in many countries. With a focus on delivering the RSPI objectives and in view of the short timeframe, it will be essential to focus on particular information required to take decisions in priority areas in the different country settings and paying particular attention to what data are required by front-line managers. Data analyses should thus be informed primarily by country needs rather than those of partners. A prioritisation of data requirements per country should be pursued to focus efforts on those that are on the critical path to reaching the RSPI goals. While strategic data improvement plans based on information system and data quality assessments are universally needed, more sophisticated approaches should be limited to countries with more mature immunization systems. Further, countries are to evaluate the strength of their surveillance systems and, where necessary, re-establish surveillance in a more coordinated way.
5. Involve new players and use new approaches to enhance human resource capacity: The success of any program is heavily reliant on the personnel that operate them. Adequate levels of competency, strong managerial skills and well-defined accountability frameworks are all pre-requisites for a well-performing health work-force. The financial and managerial shortcomings of the public sector often represent a major challenge in achieving results. In view of the fact that interventions cannot be implemented in isolation in immunization (or healthcare), innovative avenues should be explored in areas such as training of healthcare cadres or in providing opportunities to exchange skills across countries and regions. A regional and national secondment mechanism to be fed by public health institutions should be implemented to provide countries with sufficient additional staff in the short term and at the same time create unique opportunities for on-the-job development.
6. Employ innovative instruments to sustain financing: Countries are required and expected to take on more financial responsibilities for their immunization systems particularly in light of the Gavi transition and GPEI ramp down. This should result from a combination of increasing domestic investments, innovative financing mechanisms that address specific financing bottlenecks as well as focused research on the efficiency of immunization and health systems. Countries at different stages of transition from Gavi support will require tailored strategies.

Detailed recommendations are found in the independent mid-term RSPI evaluation report.

CONCLUSION

Success in the WHO African Region is critical to the success of global immunization gains. The elimination and control of diseases relies on each region to attain and maintain coverage targets. The African mortality rate for VPDs is still more than twice the global average mortality rate[24] and some regional specific VPDs are disproportionately present in the African region[25], hence much work remains to be done in the region.

As the Decade of Vaccines draws to a close, a surge effort is required to achieve the RSPI goals or sufficiently close the remaining gaps. To do so the coordinated effort of all partners is required and all stakeholders should align to the recommendations of the mid-term review. With teamwork, focus, determination and sufficient resources, it is possible to reach many of the objectives as laid out in the RSPI and succeed in reaching coverage targets, eliminating polio, progressing towards the elimination of measles, and containing other VPDs.

The independent mid-term evaluation panel recommends countries and partners implement the **six key recommendations** presented herein:

1. Leverage the ADI commitments
2. Define community-centred and country-specific approaches to improve equitable access
3. Foster a Universal Health Coverage approach that puts immunization at the core of primary care
4. Improve availability and use of appropriate quality data for decision
5. Involve new players and use new approaches to enhance human resource capacity, and
6. Employ innovative instruments to sustain financing

[24] Global Vaccine Action Plan – Annex to the GVAP Secretariat Annual Report 2016: Progress Report for the African Region
[25] Meningitis A, Yellow Fever, Cholera

Two additional areas of recommendation were discussed by the panel that, while they may only have limited immediate impact on the achievement of the 2020 RSPI targets, should be given adequate attention to ensure that progress continues and longer term strategic goals are achievable.

The panel recommends enhanced investments into **research**. Research capacity strengthening needs bold actions in African countries which should strive towards greater regional reliance in research and fair and balanced alliances with external partners. This includes countries fully implementing the Algiers Declaration on Narrowing the Knowledge Gap to Improve Africa's Health; partners providing high-quality technical assistance for basic and operational research focused on the implementation of research results into action and policy; and WHO and partners preparing an investment case for regional vaccine manufacturing in alignment with the ADI commitments, particularly for an affordable polyvalent conjugate meningitis vaccine. Research agendas should be defined relevant to a country's burden of disease and health and immunization services capacity and ongoing social science research should be expanded to include behavioural and economic issues, and extended across the region.

Further, whilst **vaccine safety control measures** are not included in the six priority recommendations, the panel recommends, where appropriate, countries should establish fully capacitated AEFI committees and AEFI databases; countries should develop Standard Operating Procedures (SOPs) on detection and reporting of signals of breaches of safety under the oversight of NRAs; and, where not in place, countries should establish standard vaccine safety processes. WHO is to assist countries to become a part of global pharmacovigilance systems.

Additionally, the MTR review panel recommends that partners have a particular **focus on large and/or fragile countries and humanitarian emergencies.** DRC, Ethiopia and Nigeria, all have excessively low coverage rates, and are responsible for more than one third of the total regional birth cohort. Targeted support to these three countries, with intense tailoring of the interventions at subnational level, will greatly improve progress in the region and the panel recommends partners provide exhaustive support to these countries. Alongside there is an increasing number of outbreaks and humanitarian emergencies of various nature which the region faces at different times and in different places. Preparedness for immunization in such situations should receive specific attention and resource provision in close collaboration with governmental and non-governmental partners engaged in humanitarian emergency mitigation.

The MTR review panel further recommends that a **tailored approach be implemented with countries** recognising the huge variances within the region, and the fact that blanket recommendations are not always appropriate, e.g. some countries are in a humanitarian crisis, whilst other countries have strong and robust immunization and governance systems. Support to countries should be systematically tailored depending on a country's capacity and maturity of its health and immunization system.

Many countries are innovatively and effectively delivering, and financing, vaccines and are constantly improving their immunization systems. The panel recommends that WHO strengthens the process for the documentation and dissemination of **best practice sharing** within the region, and across regions.

Finally, the MTR review panel found that progress against some of the Strategic Directions was difficult to quantify. These are largely process indicators, hence adequate assessment of progress against these is limited and difficult to translate into actions. The panel recommends that the **Strategic Direction indicators be reviewed**. Consideration should be given to data required to support consistent assessments of progress e.g. through more relevant and sensitive indicators, improved data quality and integrated systems. These indicators should be specific, measurable, achievable, realistic and time-bound.

ANNEXES

REGIONAL COVERAGE, AFR 2013-2017

VACCINES	COVERAGE				
	2017	2016	2015	2014	2013
BCG	80	79	79	78	77
DTP1	79	79	80	79	78
DTP3	72	72	72	72	70
HepB3	72	72	72	71	70
HiB3	72	72	72	71	67
IPV1	46	39	20		
MCV1	70	70	70	69	70
MCV2	25	23	18	11	7
PCV3	68	67	62	49	34
OPV3	71	70	71	71	70
RCV1	26	13	12	9	4
ROTAC	46	45	40	29	12
YFV	41	40	40	40	38

Source: WUENIC 2017 released in July 2018

DTP3 AND MCV1 COVERAGE BY COUNTRY, AFR 2013-2017

INDICATORS:	DTP3 COVERAGE WUENIC					MCV1 COVERAGE WUENIC				
	2017	2016	2015	2014	2013	2017	2016	2015	2014	2013
Algeria	91	91	95	95	95	88	94	95	95	95
Angola	52	55	55	55	54	42	45	51	56	59
Benin	82	82	82	78	77	74	74	74	68	68
Botswana	95	95	95	95	95	97	97	97	97	97
Burkina Faso	91	91	91	91	88	88	88	88	88	82
Burundi	91	94	94	95	96	90	93	93	94	98
Cabo Verde	96	96	93	95	93	96	93	92	93	91
Cameroon	86	85	84	87	89	77	78	79	80	83
Central African Republic	47	47	47	47	23	49	49	49	49	25
Chad	41	41	42	36	39	37	37	46	45	57
Comoros	91	91	91	87	87	90	90	90	86	85
Congo	69	71	80	90	85	70	67	80	80	80
Côte d'Ivoire	84	82	80	73	75	78	74	69	59	69
Democratic Republic of Congo	81	79	81	80	74	80	77	79	77	76
Equatorial Guinea	25	19	16	24	6	30	30	27	44	42
Eritrea	95	95	95	94	94	99	99	97	90	94
Eswatini	90	90	90	98	98	89	89	89	97	96
Ethiopia	73	73	73	61	59	65	66	65	54	55
Gabon	75	75	80	70	79	63	64	68	61	70
Gambia	92	95	97	96	97	90	97	97	96	96
Ghana	99	93	88	98	90	95	89	89	92	89
Guinea	45	45	45	34	44	48	48	48	28	39
Guinea-Bissau	87	87	87	87	87	81	81	81	81	81
Kenya	82	89	89	92	87	89	96	96	95	94
Lesotho	93	93	93	93	93	90	90	90	90	90
Liberia	86	79	52	50	76	87	80	64	58	74
Madagascar	74	77	69	73	74	58	58	58	64	63
Malawi	88	84	88	91	89	83	81	87	85	88

Mali	66	66	66	66	64	61	61	61	61	63
Mauritania	81	74	73	81	80	78	72	70	75	80
Mauritius	94	96	97	97	98	89	92	99	98	99
Mozambique	80	80	80	79	78	85	85	85	85	85
Namibia	88	85	92	88	89	80	75	85	83	82
Niger	81	80	75	75	70	78	76	75	73	76
Nigeria	42	42	42	43	43	42	42	42	44	43
Rwanda	98	98	98	98	98	95	95	96	97	95
Sao Tome and Principe	95	96	96	95	97	90	93	93	92	91
Senegal	93	93	89	89	92	90	93	80	80	84
Seychelles	97	96	97	99	98	99	97	98	99	97
Sierra Leone	90	84	86	83	92	80	85	78	80	85
South Africa	66	66	75	77	73	60	75	76	71	66
South Sudan	26	26	31	39	45	20	20	20	22	30
Togo	90	89	88	87	84	91	87	85	82	72
Uganda	85	85	85	85	84	80	80	80	85	84
United Republic of Tanzania	97	97	98	97	91	99	90	99	99	99
Zambia	94	91	90	86	79	96	93	90	85	80
Zimbabwe	89	90	87	91	95	90	95	86	92	93
# with >=90%	20	19	17	19	17	16	17	15	16	15
# >=80<90%	14	12	16	11	11	13	10	12	13	14
# >=50<80%	7	10	8	11	13	11	13	14	12	13
# <50%	6	6	6	6	6	7	7	6	6	5
	47	47	47	47	47	47	47	47	47	47

Source: WUENIC 2017 released in July 2018

DISTRICT LEVEL IMMUNIZATION COVERAGE BY COUNTRY, AFR 2013-2017

INDICATORS:	% DISTRICTS WITH AT LEAST 80% COVERAGE FOR DTP3					% DISTRICTS WITH AT LEAST 80% COVERAGE FOR MCV1				
	2017	2016	2015	2014	2013	2017	2016	2015	2014	2013
Algeria	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Angola	50	54	51	46	66	40	39	51	52	76
Benin	95	92	91	73	84	96	90	88	57	69
Botswana	42	79	50	79	58	50	75	50	79	96
Burkina Faso	99	100	100	100	100	99	100	100	100	100
Burundi	74	93	89	84	93	72	91	82	87	93
Cabo Verde	91	82	82	100	82	91		82	100	82
Cameroon	71	63	68	71	78	49	48	49	51	64
Central African Republic	20	17	7	10	4	13	17	17	27	4
Chad	38	66	60	51	60	16	56	52	42	54
Comoros	65	47	59	53	65	47	41	53	59	59
Congo	24	29	37	77	73	27	22	33	57	57
Côte d'Ivoire	98	98	91	74	99	87	90	56	26	70
Democratic Republic of Congo	91	83	86	83	80	87	72	78	77	75
Equatorial Guinea	22		0	11	6	17		11	11	6
Eritrea	38	48	50	36	40	31	47	34	36	41
Eswatini	100	50	100	75	25	25	0	100	25	50
Ethiopia	78	76	74	65	50	72	71	68	57	38
Gabon	49	41	41	25	33	18	20	24	18	25
Gambia	100	100	100	100	100	100	100	100	100	100
Ghana	86	87	81	76	75	79	79	74	72	15
Guinea	76	87	74	37	92	76	92	71	79	87
Guinea-Bissau	64	27	45	45	91	0	18	18	27	73
Kenya	32	47	35	47	45	21	45	38	52	38
Lesotho	80	10	0	20	0	40	0	10	0	0
Liberia	87	80	20	13	87	53	40	20	7	27
Madagascar	88	94	66	80	76	63	85	58	72	58
Malawi	75	68	75	89	75	68	61	79	75	75
Mali	77	82	75	89	77	79	82	71	79	82
Mauritania	76	67	30	57	42	58	62	30	36	32
Mauritius	90	80	100	100	100	80	90	100	100	100
Mozambique	91		86	88	86	89		79	84	81
Namibia	94	79	97	74	89	62	35	85	74	77
Niger	83	89	75	86	90	82	80	75	80	83
Nigeria	88	69	80	80	72	78	79	75	76	73
Rwanda	100	100	117	100	100	100	100	100	97	100
Sao Tome and Principe	100	100	100	100	100	100	100	100	100	100
Senegal	84	80	68	58	32	74	79	63	50	24
Seychelles	60	67		80	100	80	73		87	87
Sierra Leone	79	86	71	93	93	71	86	43	86	79
South Africa	48	40	87	87	65	52	94	96	79	56
South Sudan	30		39	25	23	34		36	45	49
Togo										
Uganda	86	87	81	76	75	79	79	74	72	15
United Republic of Tanzania	76	87	74	37	92	76	92	71	79	87
Zambia	64	27	45	45	91	0	18	18	27	73
Zimbabwe	32	47	35	47	45	21	45	38	52	38

# with 100%	4	4	5	6	6	3	4	6	5	5
# >=50<100%	32	30	30	29	30	29	25	26	29	29
# with <50%	10	9	10	11	10	14	13	13	12	12
# missing data	0	3	1	0	0	0	4	1	0	0
	46	46	46	46	46	46	46	46	46	46

Source: JRF 2017 as of July 2018

IMMUNIZATION FINANCING BY COUNTRY, AFR 2017

INDICATORS:	PERCENTAGE OF TOTAL EXPENDITURE ON ROUTINE IMMUNIZATION FINANCED BY GOVERNMENT FUNDS					PERCENTAGE OF TOTAL EXPENDITURE ON VACCINES FINANCED BY GOVERNMENT FUNDS				
	2017	2016	2015	2014	2013	2017	2016	2015	2014	2013
Algeria	1 00	100	100	100	100	100	100	100	100	100
Angola					87.5	97	35	64	64	55
Benin	53	2	69.43	33	33	53	2	31.23	32	32
Botswana	99	98	100	97	100	100	100	100	100	100
Burkina Faso	28		15	9	22	24		12	11	22
Burundi	11	6	6	8	5	11	5	6	7	5
Cabo Verde				100	100		100		100	100
Cameroon	32	33	10	21	16	31	33	10	15	12
Central African Republic	6	2	1	18	5	5	4	2	4	2
Chad		38	38	54	35		16	35	98	41
Comoros		12	21	8		12	8	8	8	0
Congo	20	38	39	40	24	42	78	55	34	15
Côte d'Ivoire	27	46	63	10	83	23	54	25	16	60
Democratic Republic of Congo	1	4	3	5	7	0	6	4	4	7
Equatorial Guinea	100	64	100	100	80	100	100	100	100	100
Eritrea	13	26	21	22	30	7	13	8	6	4
Eswatini	78	93	92	97	97	78	95	91	100	86
Ethiopia	41.4	41	39	33		15	15	14	12	
Gabon	72	86	0	98	95	100	100	68	100	100
Gambia	28	28	33	35		39	39	41	34	
Ghana	35	40	24	19	16	29	36	28	12	15
Guinea			31				16	0		41
Guinea-Bissau	29	40	6			29	67	6		0
Kenya	100			14	15	23	23	10	15	15
Lesotho	20	92	31	99	54	29	54	30	1	54
Liberia	15	14		6	28	7	6	0	5	5
Madagascar	21	4	36		6	38	4	55	2	6
Malawi	6	5		10	53	6	5		7	7
Mali	16	41	36	17	0	16	14	22	24	14
Mauritania	46	24	28	41	2	20	12	6	11	16
Mauritius		98	100				98	100	100	100
Mozambique			20		23			22		20
Namibia	100	94				100	100		50	100
Niger (the)	32	15	14			21	16	12	44	
Nigeria	24	29	40	24		14	28	50	41	55
Rwanda	15	10	20	11	16	16	11	15	10	13
Sao Tome and Principe	65	65	75	77	89	18	10	10	8	6
Senegal	76	67	11	8	15	31	13	14	8	27
Seychelles	83	43	79	97		89	100	100	100	47

Sierra Leone	7	4	25	22	9	8	7	0	7	6
South Africa			100	100	100	100	100	100	100	100
South Sudan	5	0	11			0	0	7	50	
Togo	56	42	49	25	55	17	9	11	30	42
Uganda	35	16		49	24	20	6		15	16
United Republic of Tanzania		24	56	21	8	15	17	11	6	7
Zambia	19	19	89	33	69	13	13	21	13	29
Zimbabwe	23	31	41	30	36	10	4	4	6	5
# supporting 100%	4	1	5	4	4	6	8	6	9	8
# supporting >=50<100%	8	9	7	7	10	4	6	6	4	5
# supporting <50%	26	30	28	27	22	32	31	31	31	30
# missing data	9	7	7	9	11	5	2	4	3	4
Total	**47**	**47**	**47**	**47**	**47**	**47**	**47**	**47**	**47**	**47**

Source: JRF 2017 as of July 2018

19 COUNTRIES WITH AT LEAST 10 AEFI FOR 100000 SURVIVING INFANTS, AFR 2017

COUNTRIES	SURVIVING INFANTS 2017	# REPORTED AEFI	AEFI PER 100000
Sierra Leone	239 658	11567	4826
Burkina Faso	698 049	15218	2180
Guinea	428 512	2009	469
Nigeria	6 862 604	29915	436
Central Africa Republic	152 546	558	366
Togo	248 619	507	204
Côte d'Ivoire	836 856	1253	150
Cameroon	810 406	871	107
Comoros	24 941	24	96
Senegal	534 930	507	95
Lesotho	58 390	41	70
South Sudan	417 397	202	48
Botswana	51 541	22	43
Namibia	70 411	26	37
Eritrea	154 812	36	23
Rwanda	358 010	55	15
Ethiopia	3 160 680	403	13
United Republic of Tanzania	2 082 676	244	12
Malawi	639 280	71	11

COUNTRIES WITH STOCK OUT IN SELECTED VACCINES, AFR 2016-2017

Vaccine	Year	List countries with stock out at National level	List of countries with stock out at district level	Countries where district stock out is linked to national stock out	Countries with vaccination session interruption due to stock out of vaccine	Main reason of stock out
BCG	2016	Angola, Burkina Faso, Chad, Democratic Republic of Congo, Eswatini, Kenya, Togo, Tanzania, Zimbabwe	Angola, Burkina Faso, Central African Republic, Chad, Democratic Republic of Congo, Eswatini, Kenya, Nigeria,-Togo, Uganda, Zimbabwe	Angola, Burkina Faso, Chad, Eswatini, Kenya, Togo, Zimbabwe	Angola, Central African Republic, Democratic Republic of Congo, Eswatini, Kenya, Zimbabwe	Funding delays+++, Global shortage+, forecast not respected
	2017	Benin, Cameroon, Central African Republic, Chad, Eswatini, Kenya, Lesotho, Mozambique, Nigeria, Senegal, Togo, Uganda	Angola, Benin, Cameroon, Central African Republic, Chad, Democratic Republic of Congo, Eswatini, Kenya, Lesotho, Malawi, Mozambique, Senegal,Togo, Uganda	Benin, Cameroon, Chad, Eswatini, Kenya, Lesotho, Mozambique, Senegal, Togo, Uganda	Angola, Cameroon, Central African Republic, Chad, Eswatini, Kenya, Lesotho, Malawi, Mozambique, Senegal, Uganda	
DTP_HepB_ Hib	2016	Mali, Mauritius, South Africa	Central African Republic (the), Congo, Democratic Republic of the Congo, Mali, Mauritius, Nigeria, South Africa, Uganda	Mali, Mauritius, South Africa	Central Africa Republic, Mauritius, South Africa	Forecast errors, Procurement delays, Global shortage
	2017	Senegal	Central Africa Republic, Malawi		Central Africa Republic, Malawi	
MCV	2016	Botswana, Eswatini, Lesotho, Tanzania	Central African Republic, Democratic Republic of Congo, Eswatini, Nigeria, Uganda, Tanzania	Eswatini, Tanzania	Central African Republic, Eswatini, Tanzania	Procurement delays, Inaccurate forecasts, Funding delays, forecast not fully respected
	2017	Cameroon, Eswatini, Guinea-Bissau, Senegal	Angola, Cameroon, Central African Republic, Eswatini, Guinea-Bissau, Malawi	Cameroon, Eswatini, Guinea-Bissau	Angola, Cameroon, Central African Republic, Eswatini, Guinea-Bissau, Malawi	


TODO NIÑO O NIÑA, AL AÑO DE NACIDO
DEBE DE TENER:
Vacunas
Número de dosis
Edad de la vacunación
1
Recién Nacido
2, 4, y 6 meses
3
Polio
2, 4, y 6 meses
3
Pentavalente
2, 4, y 6 meses
3
Rotavirus
A los 12 meses
1
MMR
A los 18 meses
(al año de la tercera dosis de la Pentavalente)
1

II

Progress Report for the Region of the America

INTRODUCTION

During the 54th Directing Council meeting of the Pan American Health Organization (PAHO) in September 2015, Member States approved a resolution to adopt the Regional Immunization Action Plan (RIAP) as the framework to identify and overcome immunization challenges currently faced by the countries of the Americas. The creation of the RIAP was the result of an extensive consultation process conducted among those involved in the Region's immunization programs, including national managers of the Expanded Program on Immunization (EPI), PAHO immunization focal points and other key partners.

RIAP aims to provide Member States with the rationale, guiding principles, general and strategic objectives and monitoring and evaluation frameworks to enable national immunization programs in the Region to align successfully with the Global Vaccine Action Plan (GVAP) and implement strategies to ensure that all citizens of the Americas will benefit from immunization through 2020 and beyond.

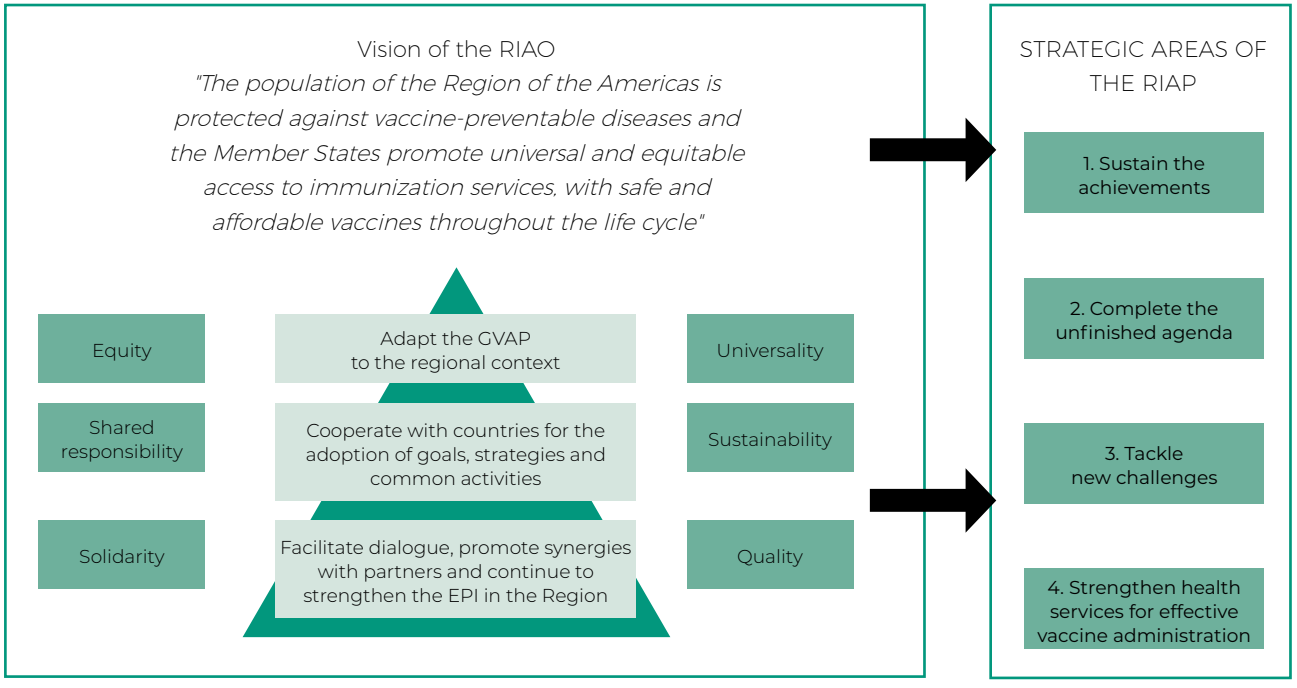
The approach of the plan through this last strategic line also permit the integration of immunization with other primary care services, such as prenatal care, adolescent sexual and reproductive health, the health of older adults and the prevention of chronic diseases, such as liver and cervical cancer.

Monitoring and evaluating the RIAP will be conducted in accordance with PAHO's results based management framework, as well as its performance management processes. PAHO developed an indicator template for each of the indicators included in the RIAP. The template includes the definition, purpose, the units and the frequency of the measurement. As an initial step, each country will be asked to evaluate its progress towards achieving the RIAP objectives, together with its National Immunization Committee. PAHO's TAG will then evaluate advances at the regional level and progress reports will be prepared annually for PAHO's Executive Management, as well as at the end of every biennium for PAHO's Governing Bodies. A final evaluation of the plan will be completed to determine the strengths and weaknesses of its implementation. The information needed will be obtained from the following sources: a) reports by the countries' ministries of health, b) PAHO-WHO/UNICEF's Joint Reporting Form on immunization (JRF) and c) the compilation of research and other available sources.

This progress report provides an overview of the Region's progress towards the objectives of the RIAP 2017 and highlights the challenges that the Region is still facing and it will be reviewed by the technical advisory group for their knowledge.

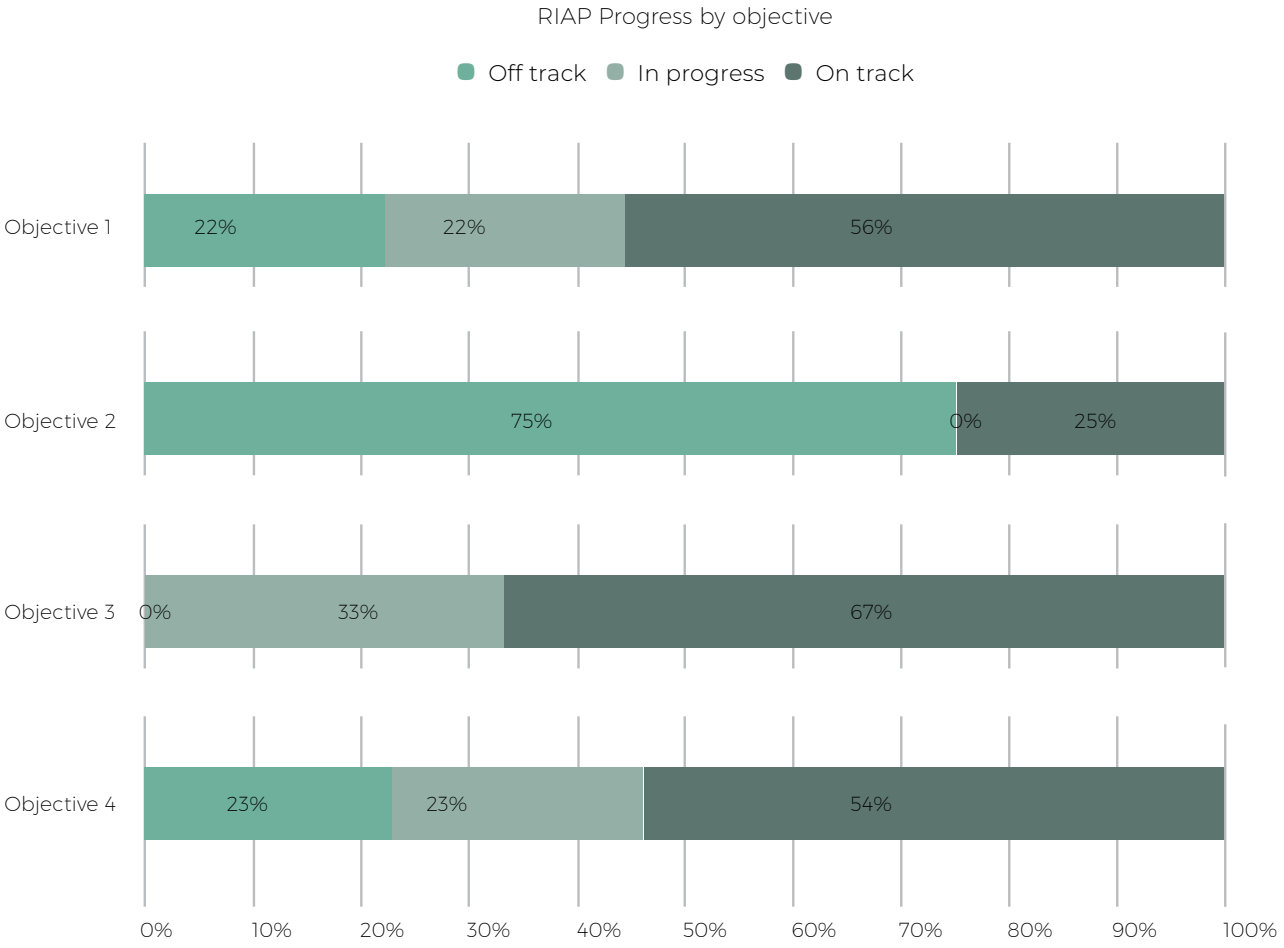
STRATEGIC LINES OF ACTION OF THE RIAP

1. Sustain the achievements;
2. Complete the unfinished agenda in order to prevent and control vaccine-preventable diseases;
3. Tackle new challenges in the introduction of vaccines and assess their impact;
4. Strengthen health services for effective vaccine administration.



UPDATE OF THE PROGRESS BY STRATEGIC LINE OF ACTION

The Regional Immunization Action Plan established 13 objectives (seven general and six strategic) and 29 indicators. As of December 2017, the situation in the Region is as follows: 15 indicators are on track; six are in progress; and eight of the indicators are off track and will require a concerted effort and urgent action to achieve the stated targets.



1. SUSTAIN THE ACHIEVEMENTS

GENERAL OBJECTIVE 1.1: MAINTAIN THE REGION'S STATUS POLIO FREE

For 2017, the Region had not met its goal of ≥ 95% polio-3 coverage because only 10 countries and territories have met the target at the national level. At the sub-national level, vaccination coverage is not uniform among municipalities. Regarding surveillance in the last five years, the Region has achieved a notification rate of ≥1 AFP case per 100,000 children aged <15 years; the percentage of cases with adequate stool samples obtained within 14 days of the onset of paralysis, which should reach at least 80%, has ranged from 7v 3-79% in the 10 years and is 75% for the last year[2]. The percentage of AFP cases investigated within 48 hours of notification, which should reach at least 80%, has ranged between 61-91%, and is 80% for the last 52 weeks1. In 2017, only Mexico and Paraguay have met these three indicators.

In order to evaluate the risk of poliovirus importation to the Americas, PAHO developed a risk analysis methodology which includes four components for assessment: i) immunization coverage, as a proxy for the level of immunity in the population, ii) AFP surveillance, iii) outbreaks, including history of cVDPV or any other VPD and availability of an outbreak response plan, and iv) others that include population and health-system specific factors that could influence national capacity to detect and respond to WPV importations or cVDPV events. The result of this assessment showed that three countries (Guatemala, Haiti, and Venezuela) were at very high-risk for polio importations, five countries were at high risk, nine countries were at medium risk, and three countries were at low risk.

REGIONAL CONTAINMENT STATUS

Aligned with GAPIII, the Regional Action Plan for poliovirus containment is being implemented in three phases linked to the milestones in the Global Polio Eradication Initiative (GPEI). The Regional plan is conducted in 44 countries and territories following the WHO guidelines, RCC orientations and PAHO technical support.

In December 2017, the RCC validated five updated reports. All countries have presented at least one report on phase I of the GAP III: WPV2/VDPV2/OPV2/Sabin2 containment. Bolivia, Caribbean Sub region, Cuba and Honduras reports have fully validated by RCC for the survey process, inventory and identification of infectious and potentially infectious of WPV2/VDPV2/OPV2/Sabin2, 18 reports has validated WPV2/VDPV2 infectious and potentially infectious and 13 country reports for Sabin2 material infectious. Seven countries of the Region have designated 32 Poliovirus Essential Facilities: Brazil (2), Canada (4), Cuba (1), Chile (3), Mexico (1), Panama (1) and United States (20). Two of these countries have nominated a National Authority for Containment (NAC).

USE OF FRACTIONAL IPV DOSES (FIPV)

In September 2017, at the 29th Pan American Sanitary Conference and 69th Session of WHO's Regional Committee for the Americas, all Member States passed the Resolution CSP29.R16 recognizing the situation of global demand and limited IPV supply, as well as recognizing PAHO's Revolving Fund as the strategic cooperation mechanism most suitable to provide access to vaccines like IPV. The Member States also called for PAHO to:

[2] Last 52 weeks, ending in epidemiological week 26 (1 July 2017)

- Negotiate the best possible price for IPV procurement in the Region of the Americas and, if necessary, adjust the terms and conditions of the Revolving Fund for this occasion only, in order to address the special circumstances currently existing and provide the supply of IPV for the Region of the Americas;
- Maintain coordination with the GPEI throughout this process in alignment with the Polio Eradication and Endgame Strategic Plan 2013-2018;
- Maintain a dialogue with partners and global IPV producers in order to accelerate and ensure the capacity to produce the necessary doses of IPV for the Region of the Americas; and
- Continue to support the Member States in their preparations to use fIPV.

IPV SUPPLY SITUATION AND FORECAST FOR 2018-2019

As requested by Member States, PAHO conducted extraordinary negotiations in 2017 which resulted in an additional 690,000 doses of IPV-10. Negotiations resumed in December 2017 and are ongoing. The Organization expects to sign a new supply agreement for IPV-10 for additional doses in 2018 and 2019.

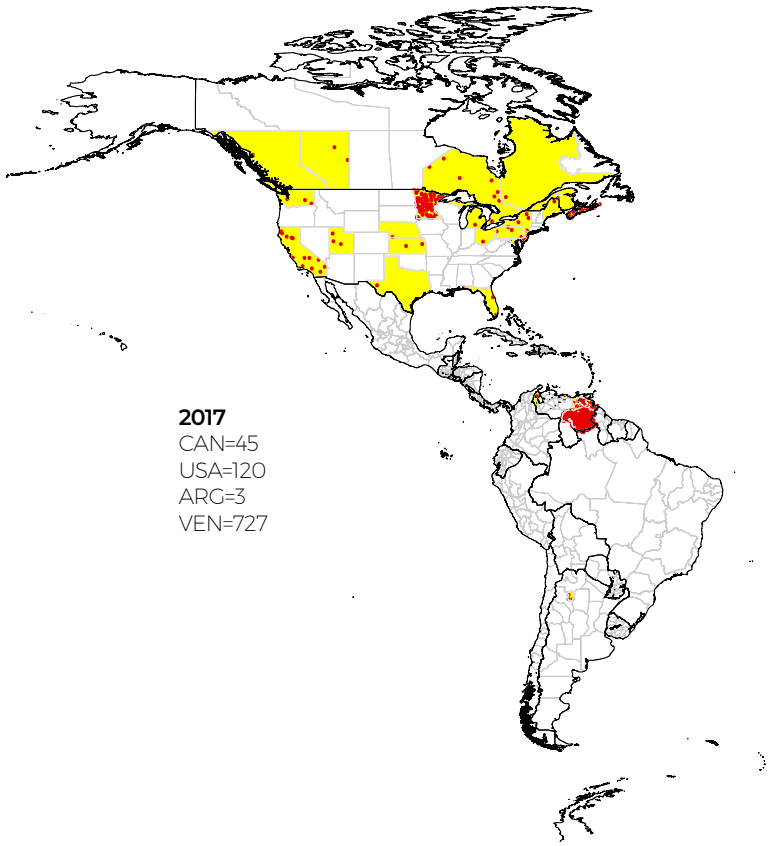
Recognizing that the ongoing global IPV supply constraints could still affect countries of the Region, TAG recommends for all countries of the Region - without exception - to be prepared for how to respond in case of a shortage. In case IPV is not available, children should receive bOPV as the first or second dose of the schedule, and receive IPV as a later dose, always respecting the minimum interval of 4 weeks between doses of polio vaccine. It is important that health care workers always clearly record what vaccine was given to each child.

GENERAL OBJECTIVE 1.2. MAINTAIN ELIMINATION OF MEASLES, RUBELLA AND CRS

MEASLES EPIDEMIOLOGICAL SITUATION IN THE AMERICAS

Between epidemiological weeks (EW) 26 and 52 of 2017, Venezuela reported 727 confirmed measles cases. Children less than five years of age were the most affected age group, followed by children 6-15 years of age. The outbreak affected four states and the majority of the cases were identified in the state of Bolivar. Measles virus genotype D8 was identified in specimens collected from cases. Measles cases reported in Argentina (3), Canada (45) and the United States (120) were either imported or import-associated. The age of cases ranged between six months and 49 years old. The identified measles virus genotypes were D8, D4 and B3.

Figure 1: Distribution of confirmed measles cases by countries, The Americas, 2017



Sources: Surveillance country reports sent to the Immunization Unit of PAHO/WHO and by the Ministry of Popular Power of Venezuela

In response to the afore-mentioned measles outbreaks, national rapid response teams were implemented. The necessary control measures included vaccination of susceptible individuals or of individuals at high risk such as health care workers, active case finding of suspected measles and rubella cases, contact tracing and follow-up, cross-border coordination in frontier municipalities (Brazil, Colombia and Venezuela), and dissemination of national epidemiological alerts and media messages.

VACCINATION WITH MMR

In 2017, regional coverage with the first dose of the measles, mumps, and rubella vaccine (also known as MMR) was 89%. However, this figure disguises a highly heterogeneous situation between countries and between municipalities within them. The regional coverage with the second dose of the MMR vaccine was 62%, falling short of the target of 95% or higher. To reduce the accumulation of susceptible individuals caused by these low coverage levels, many countries in Latin America and the Latin Caribbean continue to conduct follow-up campaigns every four or five years.

QUALITY OF EPIDEMIOLOGICAL SURVEILLANCE SYSTEMS

During the past five years (2012-2016), fulfillment of the following indicators was lower than 80% (the level established as a minimum): percentage of sites reporting weekly, percentage of samples submitted within five days, and percentage of laboratory results reported within four days. There was progress in the percentage of cases with adequate investigation, which increased from 79% and 77% in 2012 and 2013, respectively, to 82% in 2014-2016, and the percentage of cases with adequate serum samples, which exceeded 80% throughout the period. Regarding the rate of two suspected cases of measles/rubella per 100,000 populations, the target was met in the Americas throughout the post-elimination era, from 2003 until 2015, with rates ranging from 3.5 to 10.1 per 100,000. However, since 2011 this indicator has been seeing a steady downward trend, and in 2016, the rate dropped to 1.9 cases per 100,000. This pattern is a reflection of the many challenges that countries face in maintaining sensitive, high-quality surveillance systems in scenarios of epidemiological crisis due to the presence of other emerging febrile diseases (Zika in particular), which could be masking suspected cases of measles and rubella.

PLAN OF ACTION FOR THE SUSTAINABILITY OF MEASLES, RUBELLA, AND CONGENITAL RUBELLA SYNDROME (CRS) ELIMINATION, FOR THE PERIOD 2018-2023

During the 29th Pan American Sanitary Conference in September 2017, the Ministers of Health approved a Plan of Action for the sustainability of measles, rubella, and congenital rubella syndrome (CRS) elimination, for the period 2018-2023, with the purpose of protecting this important public health gain. The Plan has four strategic lines of action namely: 1) strengthening vaccination; 2) surveillance, 3) creation and deployment of rapid response teams; and 4) development of national sustainability plans.

GENERAL OBJECTIVE 1.3: MAINTAIN ACHIEVEMENTS REACHED IN VACCINE-PREVENTABLE DISEASE CONTROL

ELIMINATION OF HEPATITIS B PERINATAL TRANSMISSION

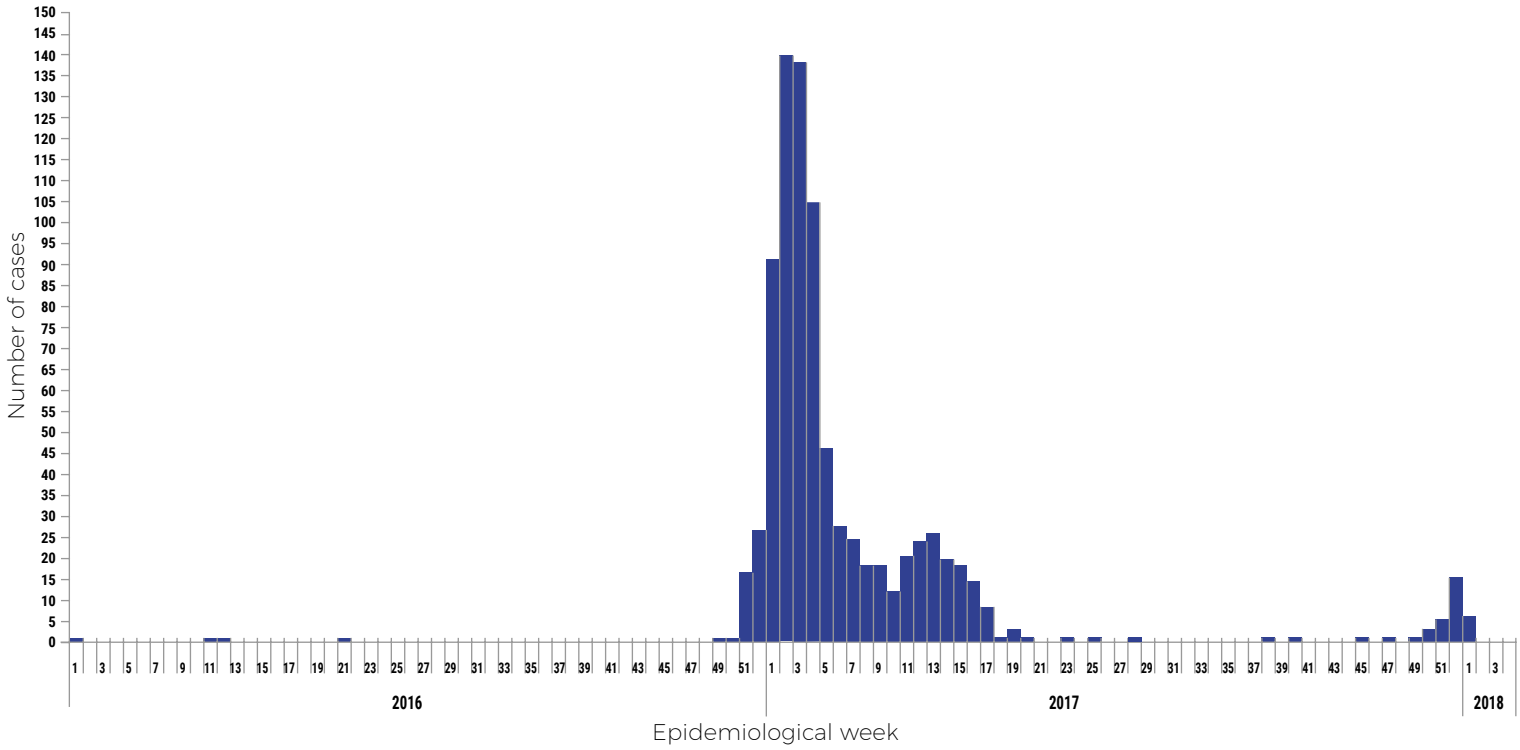
Countries in the Region have focused on the prevention of perinatal transmission of hepatitis B mainly through routine childhood hepatitis B immunization. As of 2017, 24 of 51 countries and territories have adopted the universal birth dose vaccination policy representing 80% of the birth cohort in the American region. Regional coverage in the Americas in 2017 for the third dose of hepatitis B vaccine (pentavalent) was 88% among children less than 1 year of age and birth dose coverage was 69%.

YELLOW FEVER

From 1 July 2017 to 14 January 2018, 35 confirmed human cases of yellow fever were reported in Brazil (Figure 1), including 20 deaths and 145 suspected cases who are under investigation. In recent weeks, the number of confirmed human cases of yellow fever has tripled in Brazil, mainly in the states of São Paulo and Minas Gerais. Confirmed cases were notified in the states of São Paulo (20 cases, including 11 deaths), Rio de Janeiro (three cases, including one death), Minas Gerais (11 cases, including seven deaths), and in the Federal District (one fatal case). All confirmed cases are likely to have acquired their infections in geographic locations where there are documented epizootics in non-human primates.

Although epizootics have been reported throughout 2017, there was a significant increase from September 2017. The high number of epizootics and animals concerned, indicates a high level of circulation of the virus in ecosystems favorable for transmission. From 1 July 2017 to 14 January 2018, there were 2442 epizootics in non-human primates reported in 21 federal entities, including areas that were previously not considered to be at risk for yellow fever.

Graph1: Distribution of confirmed yellow fever human cases by epidemiological week, Brazil, from 1 January 2016 to 14 January 2018



Source: http://www.who.int/csr/don/22-january-2018-yellow-fever-brazil/en/

Since September 2017, when yellow fever was confirmed in human cases and epizootics in São Paulo, national authorities have been intensifying vaccination activities through routine and preemptive immunization campaigns. Brazilian health authorities have expanded the YF vaccine recommendations for all residents aged >9 months to the states of Bahia, Espiritu Santo, Rio de Janeiro, and São Paulo. The WHO also updated vaccine recommendations for travelers to include all areas in Espiritu Santo, Rio de Janeiro and São Paulo and certain coastal areas in Bahia.

In early January 2018, to reduce the risk of a large yellow fever outbreak, the Brazilian Ministry of Health announced plans to conduct a mass yellow fever vaccination campaign which will include both standard (0.5 mL) and fractional (0.1 mL) doses. The campaign took place in São Paulo and Rio de Janeiro, from 25 January to 17 February, and in Bahia, from 19 February to 3 March. The aim was to vaccinate 21.8 million people (16.5 million with the fractionated dose and 5.3 million with the standard dose) who live in 77 municipalities in these three states.

STRATEGIC OBJECTIVE 1.1: ALL COUNTRIES MAKE A COMMITMENT TO VACCINATION AS A PRIORITY FOR HEALTH AND DEVELOPMENT

National legislation, technical advisory groups and annual immunization plan are some of the aspects that demonstrate that a country has a commitment to immunization. As for 2017, 28 countries have a legislative or regulatory basis for their immunization program; 16 countries report having the support of a well-functioning National Immunization Technical Advisory Group and 41 countries have an up-to-date annual immunization plan that includes operational and financial plans.

STRATEGIC OBJECTIVE 1.2: INDIVIDUALS AND COMMUNITIES UNDERSTAND THE VALUE OF THE VACCINES

Vaccination Week in the Americas (VWA) was launched on 23 April in Havana, Cuba – a first-time launch location for the 16-year-old campaign. This year's slogan was "Strengthen Your Defense! #GetVax #VaccinesWork" and had a football theme as the FIFA World Cup will be celebrated soon after. The opening ceremony took place at the Victoria de Giron Institute of Basic and Preclinical Sciences in presence of Carissa F. Etienne, Director of PAHO, Tedros Adhanom Ghebreyesus, Director-General of the World Health Organization (WHO), ministers and other high-level health authorities from Latin America, the Caribbean, as well other regions of the world. Many countries also used VWA as a platform for monitoring public awareness, acceptance, and satisfaction. During 2017, Grenada, Honduras, Panama, Paraguay conducted surveys regarding this topic.

GENERAL (GO) AND STRATEGIC OBJECTIVES (SO)	INDICATOR	STATUS	
GO 1.1 Maintain the Region's status as polio-free	**GO 1.1.1** Number of countries and territories reporting cases of paralysis due to wild poliovirus or the circulation of vaccine-derived poliovirus (cVDPV) in the last year Baseline: 0 in 2013 Goal: 0 in 2020	As of 2017, 0/51 countries or territories in the Region reported cases of paralysis due to wild poliovirus or the circulation of vaccine-derived poliovirus.	✔ On track
GO 1.2 Maintain elimination of measles, rubella, and CRS	**GO 1.2.1** Number of countries and territories in which endemic transmission of measles or rubella virus has been reestablished Baseline: 0 in 2013 Goal: 0 in 2020	As of 2017, 1/51 countries or territories in the Region reported endemic cases of measles or rubella virus.	✔ On track
GO 1.3 Maintain achievements reached in vaccine-preventable disease control	**GO 1.3.1** Number of countries and territories that meet the indicators for monitoring the quality of epidemiological surveillance of acute flaccid paralysis (AFP) cases Baseline: 2 in 2013 Goal: 13 in 2020	As of 2017, 2/51 countries or territories in the Region met the indicators for monitoring the quality of epidemiological surveillance of acute flaccid paralysis (AFP) cases.	✗ Off track
	GO 1.3.2 Number of countries and territories that meet the indicators for monitoring the quality of epidemiological surveillance of suspect measles, rubella and congenital rubella syndrome cases Baseline: 9 in 2013 Goal: 18 in 2020	As of 2017, 18/51 countries or territories in the region met the indicators for monitoring the quality of epidemiological surveillance of suspect measles, rubella and congenital rubella syndrome cases.	✔ On track
	GO 1.3.3 Number of countries and territories that administer hepatitis B vaccine to newborns during the first 24 hours Baseline: 18 in 2013 Goal: 25 in 2020	As of 2017, 24 countries and territories have adopted the universal birth dose vaccination policy.	✔ On track
SO 1.1. All countries make a commitment to vaccination as a priority for health and development	**SO 1.1.1** Number of countries and territories that have a legislative or regulatory basis for their immunization program Baseline: 28 in 2013 Goal: 32 in 2020	As of 2017, no additional countries have approved legislations for their immunization programs.	✗ Off track
	SO 1.1.2 Number of countries and territories having an immunization technical advisory committee that meets WHO's criteria for good operation Baseline: 15 in 2013 Goal: 18 in 2020	As of 2017, 16 countries report having the support of a well-functioning National Immunization Technical Advisory Group (NITAG).	⚠ In progress
	SO 1.1.3 Number of countries and territories that have a current annual immunization plan of action that includes operational and financial plans Baseline: 25 in 2013 Goal: 35 in 2020	As of 2017, 41 countries have an up-to-date annual immunization plan that includes operational and financial plans.	✔ On track
SO 1.2 Individuals and communities understand the value of the vaccines	SO 1.2.1 Number of countries and territories that report having monitored public satisfaction with vaccination during Vaccination Week in the Americas or other activities Baseline: 0 in 2013 Goal: 15 in 2020	As of 2017, 4 countries and territories have reported using Vaccination Week as a platform to monitor public awareness, acceptance, and satisfaction during Vaccination Week in the Americas in 2017.	⚠ In progress

2. COMPLETE THE UNFINISHED AGENDA IN ORDER TO PREVENT AND CONTROL VACCINE-PREVENTABLE DISEASES

GENERAL OBJECTIVE 2.1: ELIMINATE NEONATAL TETANUS AS A PUBLIC HEALTH PROBLEM IN ALL COUNTRIES

Haiti was the only country in the Region that had not achieved this goal despite being implemented since 2003 the recommended strategies for the elimination of maternal and neonatal tetanus (MNT). A literature review and field visits, conducted in June 2016, concluded that there was a likelihood of the elimination of MNT in Haiti. To confirm that MNT was eliminating MNT from Haiti, a neonatal tetanus-related neonatal mortality survey was conducted in the Southern Department with the highest risk for MNT in the country after the pre-validation.

A total of 10,516 households were surveyed and 2,302 live births were examined. Maternal coverage by Td2 was 53% (card + history). The proportion of deliveries in a health facility was 45%. The proportion of mothers who applied substances to the umbilical cord was 31%. As no cases of tetanus were identified in the 44 neonatal deaths recorded with a survey deemed of good quality, TN was considered eliminated in the Southern Department for the period from May 1, 2016 to April 30, 2017. Therefore, MNT was considered eliminated in Haiti for the same period.

GENERAL OBJECTIVE 2.2: MEET VACCINATION COVERAGE TARGETS AT ALL LEVELS

The most recent WHO/UNICEF estimates of national immunization coverage indicate that regional immunization coverage for 2017 with BCG was 94%; the coverage of three doses of Diphtheria-Tetanus-Pertussis containing vaccine (DTP3), Polio3 and PCV3 was 88%, while the coverage with measles containing vaccine dose 1 (MCV1) was 89% in children 1 year old, showing a slightly decrease compared with 2016.

In 2017, the number of countries and territories reporting national average coverage of at least 95% with DPT3 in children under 1 year of age was 11, compared with 13 in 2016. There is still inequality in immunization coverage, both between countries and within each country. In 2017, out of a total of nearly 15,000 municipalities of Latin America and the Caribbean 54%, reported vaccination coverage with DPT3 below 95% and just 13 countries report DPT3 coverage of at least 80% in each district.

Figure 2: Regional coverage by vaccine, 2017

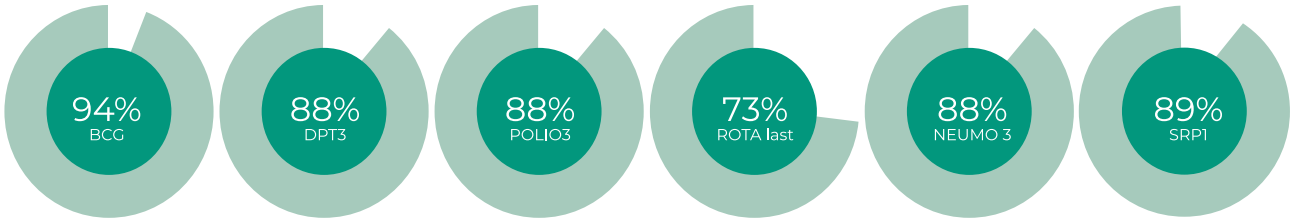
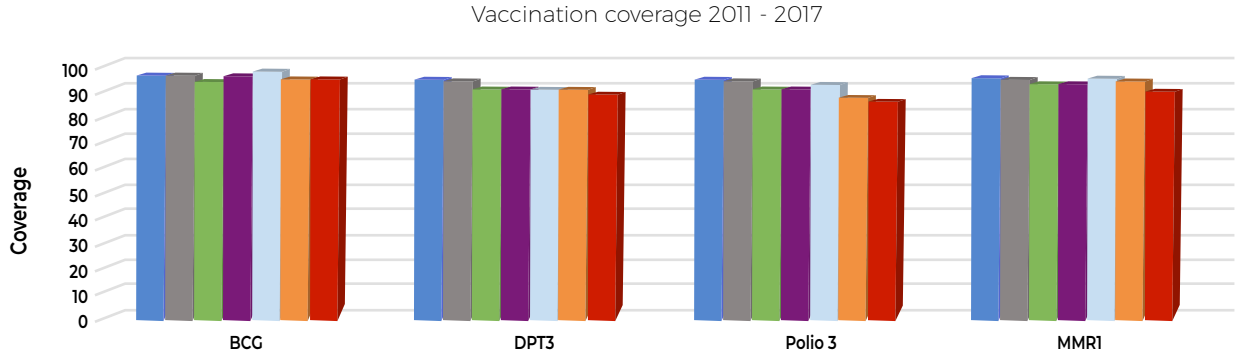


Figure 3: Regional vaccination coverage in children <1 year, 2011 - 2017



	BCG	DPT3	Polio 3	MMR1
2011	96	94	94	94
2012	96	93	93	94
2013	93	90	90	92
2014	95	90	90	92
2015	97	91	92	94
2016	94	91	87	93
2017	94	88	88	89

STRATEGIC OBJECTIVE 2.1: IMMUNIZATION BENEFITS EXTEND EQUITABLY TO ALL PEOPLE AND SOCIAL GROUPS

One area for impact is ensuring that immunization reaches everyone "no matter where they are born, who they are, or where they live." It is for this reason that in addition to an analysis of aggregate municipal data, PAHO has promoted analysis of inequalities in immunization. As for 2017, there is no country in the Region Reporting coverage by income or other subgroups that make it possible to monitor vaccination equity. However, the countries have been working on the methodology with two regional training workshops where 21 countries were trained in the methodology.

GENERAL (GO) AND STRATEGIC OBJECTIVES (SO)	INDICATOR	STATUS	
At all levels	Three doses of DPT vaccine in children under 1 year Baseline: 19 in 2013 Goal: 35 in 2020		✗ Off track
	GO 2.2.2 Number of countries reporting coverage of at least 80% in each district or equivalent with three doses of DPT vaccine in children under 1 year Baseline: 12 in 2013 Goal: 35 in 2020	As of 2017, 13 countries report DPT3 coverage of at least 80% in each district.	✗ Off track
SO 2.1 Immunization benefits extend equitably to all people and social groups	**SO 2.1.1** Number of countries and territories reporting coverage by income quintile or other subgroups that make it possible to monitor vaccination equity Baseline: 0 in 2013 Goal: 15 in 2020	As of 2017, there is no country in the Region reporting coverage by income quintile or other subgroups that make it possible to monitor vaccination equity.	✗ Off track

3. TACKLE NEW CHALLENGES IN THE INTRODUCTION OF VACCINES AND ASSESS THEIR IMPACT

GENERAL OBJECTIVE 3.1: INTRODUCE VACCINES IN SUSTAINABLE MANNER

Significant progress was made in the introduction of new vaccines during the last years. To minimize the risk of vaccine-derived polioviruses, especially for type 2, boost population immunity and accelerate the eradication of polio, all countries successfully switched from trivalent to bivalent oral polio vaccine and introduced inactivated polio vaccine, meeting the set timelines for the global switch. Currently, 35 countries and territories have introduced pneumococcal conjugate vaccine, 31 HPV and 20 rotavirus vaccines in their routine vaccination schedule.

STRATEGIC OBJECTIVE 3.1: DECISION-MAKING IS EVIDENCE-BASED AND IMPACT ASSESSMENTS ENSURE THAT POLICIES ARE ADOPTED TO MAXIMIZE THE BENEFITS OF VACCINATION

Since the introduction of pneumococcal conjugate vaccine and rotavirus vaccine countries have been carrying out effectiveness and impact studies with the technical cooperation from PAHO. As of 2017, 16 countries nd territories have conducted studies prior to the introduction of new vaccines, while 13 countries and territories have conducted studies after the introduction of a vaccine (in 2017, Dominica Republic conducted a PCV effectiveness).

In December 2016, a systematic review aimed at summarizing evidence of impact and effectiveness of PCVs on hospitalizations and deaths due to pneumonia, meningitis, and invasive pneumococcal disease (IPD) among children aged <5 years in LAC was published by PAHO.[3] The search was conducted using the Medline, WoS, Lilacs, Scopus and Central databases and gray literature published in any language from 2009

[3] De Oliveira, PLOS ONE | DOI:10.1371/journal.pone.0166736

to January 2016. Inclusion criteria considered studies addressing the outcomes of interest among children in the target age group and the following designs: randomized trials, cohort or case-control studies, interrupted time series studies with at least three data points before and after the intervention, and before-after studies.

The screenings identified 1,085 citations, 892 from databases and 193 from other sources. Of these, 22 were included for analysis: 15 focused on PCV10 and seven on PCV13. The studies were from Argentina, Brazil, Chile, Nicaragua, Peru and Uruguay. A descriptive analysis was performed based on the effectiveness measurements provided or derived from the data available in each study and sensitivity analysis. Estimates of effectiveness ranged from 8.8-37.8% for hospitalizations due to x-ray confirmed cases of pneumonia, 7.4-20.6% for clinical pneumonia hospitalizations, 13.3-87.7% for meningitis hospitalizations, and 56-83.3% for IPD hospitalization, varying by age, outcome definition, type of vaccine and study design. The main conclusions of the systematic review were that the available evidence indicates significant impact for both PCV10 and PCV13 in the outcomes studied. There was no evidence of the superiority of one vaccine over the other with regards to impact and effectiveness on hospitalization and mortality outcomes in children aged <5 years. These results provide immunization programs with information for decision-making on PCV use.[4]

Similar results were found in another global systematic review reported in "Pneumococcal Conjugate Vaccine Product Assessment". A significant reduction in IPD caused by vaccine serotypes was observed following PCV10 and PCV13. In addition, most published studies have demonstrated PCV impact on mortality following the routine use of both available products in a range of high- and low-income countries. In summary, the global review supports the findings from the systematic review in LAC.

GENERAL (GO) AND STRATEGIC OBJECTIVES (SO)	INDICATOR	STATUS	
GO 3.1 Introduce vaccines in sustainable manner	**GO 3.1.1** Number of countries and territories that have introduced one or more new vaccines into their national vaccination schedules Baseline: 32 in 2013 Goal: 40 in 2020	As of 2017, 41 countries and territories have introduced one or more new vaccines [Rotavirus vaccine, PCV, HPV] into their national vaccination schedule.	✔ On track

[4] *Pneumococcal Conjugate Vaccine Product Assessment*; Kate O'Brien, April 2017, available at www.jhsph.edu/research/centers-and-institutes/ivac/resources/pcv-product-assessment-april-25-2017.pdf

SO 3.1 Decision-making is evidence-based and impact assessments ensure that policies are adopted to maximize the benefits of vaccination	**SO 3.1.1** Number of countries and territories that have conducted studies prior to the introduction of a vaccine (e.g. cost-effectiveness analysis) Baseline: 14 in 2013 Goal: 20 in 2020		⚠ In progress
	SO 3.1.2 Number of countries and territories that have conducted studies after the introduction of a vaccine (e.g. impact assessments, operational review, etc.) Baseline: 9 in 2013 Goal: 15 in 2020	As of 2017, 13 countries and territories have conducted studies after the introduction of a vaccine.	✔ On track

4. STRENGTHEN HEALTH SERVICES FOR EFFECTIVE VACCINE ADMINISTRATION

GENERAL OBJECTIVE 4.1: EXCEED THE EXPECTED RESULTS PROPOSED BY THE POST-2015 AGENDA FOR REDUCTIONS IN INFANT MORTALITY AND MATERNAL MORTALITY

MATERNAL IMMUNIZATION

The establishment of a routine maternal immunization platform represents a new paradigm that includes the universal use of influenza, tetanus and pertussis vaccines and consideration of the use of other relevant vaccines in the near future. Maternal immunization has the potential to impact early childhood morbidity, and in some cases, mortality. Infections such as respiratory syncytial virus (RSV), influenza, and pertussis are associated with adverse outcomes in young infants – i.e. prior to commencement or completion of primary infant immunization series. Gains in reducing global childhood mortality have mostly been outside the neonatal period.

To date, in all LAC countries, the tetanus-diphtheria-containing vaccine is recommended for all women of childbearing age. In 33 LAC countries influenza immunization is indicated for pregnant women, while the pertussis-containing vaccine is indicated for pregnant women in 14 LAC countries. TAG recommends this vaccine in case of outbreak situations.

STRATEGIC OBJECTIVE 4.1: SUPPLIES ARE AVAILABLE FOR THE IMMUNIZATION PROGRAM ON A SUSTAINABLE BASIS WITH NATIONAL RESOURCES

As of 2017, 33 countries and territories in the Americas are able to fund their own programs with domestic resources. Additionally, to ensure the financial sustainability, countries should ensure the quality of vaccine of their immunization programs. 100% of the birth cohort in Latin America and the Caribbean has access to an adequate vaccine supply of quality vaccines because they buy the vaccines through the PAHO revolving found or they have been developed the capacity to monitoring and assure the safe use of vaccines through the regulatory authority.

STRATEGIC OBJECTIVE 4.2: STRENGTHENED IMMUNIZATION SERVICES ARE PART OF COMPREHENSIVE, WELL-RUN HEALTH SERVICES

DROPOUT RATE

In the Americas Region, 93% of children less than 1 year of age were immunized for DPT1 while 88% were immunized for DPT3 with an overall dropout rate of 5%. In countries such as Brazil, Dominican Republic, Panama, Suriname and Venezuela, the dropout rate was greater than 10%. The dropout rate is a measure of the strength of a health and immunization system, demonstrating its potential to reach children with the third dose in a series and countries should define specific strategies to address factors contributing to incomplete infant vaccination.

DATA QUALITY

Countries have made great strides in strengthen their vaccination information systems. With support from PAHO, they have worked to improve data quality, availability, and utilization. During 2017 1data quality assessments was conducted in Ecuador. In order to strengthen the capacity of countries for analyzing data. In 2013, PAHO developed and piloted a "Toolkit for monitoring coverage of integrated public health interventions," which has since then been used to train 442 health workers from eight countries in the Region.[5]

[5] *http://iris.paho.org/xmlui/bitstream/handle/123456789/34510/9789275119822-eng.pdf*

ELECTRONIC IMMUNIZATION REGISTRY SYSTEMS (EIRS)

As of 2017, fourteen countries currently use EIR systems at the national, subnational and/or local levels and nine countries are planning, designing, developing or implementing these systems.

To support countries in the assessment of EIR systems' introduction, feasibility, development and implementation, taking into account their national eHealth strategies, PAHO has worked closely with countries to develop a document of practical considerations to guide countries in the consideration and implementation of such systems.[6]

Despite countries' efforts, problems persist regarding the availability, quality and use of vaccination data to monitor EPI performance indicators. Countries face the challenges of ensuring the availability of systematic, complete and consistent data that respond to the EPI's needs for evaluation and strengthening the collection, analysis and use of data at all levels of responsibility. Countries need to ensure that their information systems and tools used (both paper and electronic) are efficient and adaptable to different types of users.

SUPPLY AND COLD CHAIN OPERATIONS

Analysis of data from PAHO/WHO's JRF country reports on cold chain indicators for 2017 shows that 17 countries in the Region experienced stock-outs (for Pneumo conj, Rotavirus, BCG, DPT, Measles, Yellow fever, HPV, IPV, Polio, Tdap, Hep B). Data suggests that several countries need to evaluate the management inventory system to assess their current stock management system or to consider installing a digital inventory management information system. PAHO offers a free version of such software, Vaccination Supplies Stock Management (VSSM). Managing the stocks of vaccines and immunization-related supplies is essential to ensuring that each dose of vaccine remains potent and can be safely administered. As of 2017, VSSM is installed in five countries, and 12 countries have been trained to use it. Three countries use the web version of the VSSM and one country has expanded the use of wVSSM to other health services for managing stocks of other medical supplies (pharmaceuticals and medical devices).

Since 2014, PAHO has supported four EVM assessments in Bolivia, Guyana, Honduras and Nicaragua. UNICEF supported the EVM assessment in Haiti. All four PAHO-supported countries achieved EVM scores of >80% with Honduras earning the highest at 97%. This is a significant achievement considering that 80% is the minimum score established by EVM. These evaluations also revealed the need to replace aging cold chain equipment and the vehicles needed to distribute vaccines. Countries will be responsible for allocating financial resources to replace the aforementioned equipment. Decisions to purchase more equipment or to increase supply chain operations, to ensure that vaccine or supply stock-outs are avoided in all facilities, will depend upon economic and logistical evaluations.

[6] *http://iris.paho.org/xmlui/bitstream/handle/123456789/34865/9789275119532_eng.pdf*

GENERAL (GO) AND STRATEGIC OBJECTIVES (SO)	INDICATOR	STATUS	
GO 4.1 Achieve the expected results proposed by the Post-2015 Development Agenda for reductions in infant mortality and maternal mortality	**GO 4.1.1** Number of countries and territories whose immunization schedules include vaccination of pregnant women against influenza and/or with tetanus-diphtheria vaccine, as tracers of maternal vaccination Baseline: 27 in 2013 Goal: 35 in 2020	As of 2017, influenza vaccination is indicated for pregnant women in 33 countries the Region.	✔ On track
	GO 4.1.2 Number of countries and territories that offer other preventive interventions integrated with vaccination Baseline: 4 in 2013 Goal: 20 in 2020	As of 2017, 9 countries offer preventive interventions integrated with vaccination. For example: Deworming, Iron and folic acid, vitamin A, etc.	⚠ In progress
SO 4.1 Supplies are available for the immunization program on a sustainable basis with national resources	**SO 4.1.1** Number of countries and territories that finance more than 90% of their immunization programs with national resources Baseline: 27 in 2013 Goal: 35 in 2020	As of 2017, 33 countries and territories in the Americas are able to fund their own programs with domestic resources.	✔ On track
	SO 4.1.2 Percentage of birth cohort in Latin America and the Caribbean that has access to an adequate vaccine supply of quality vaccines Baseline: 100 in 2013 Goal: 100 in 2020	As of 2017, 100% of the birth cohort in Latin America and the Caribbean has access to an adequate vaccine supply of quality vaccines. The Revolving Fund (RF) considers that 100% of birth cohort in the region is accessing supply of quality through participation in the RF and/or local production in countries (e.g. Argentina, Brazil, Mexico) with National Regulatory Agencies (NRAs) competent and efficient performing regulatory functions recommended by PAHO/WHO.	✔ On track
	SO 4.1.3 Number of countries and territories that procure vaccines through the Revolving Fund that meet the criteria for accuracy of demand for vaccines and supply Baseline: 10 in 2013 Goal: 30 in 2020	As of 2017, 23 of 41 participating countries achieved at least forecast accuracy targets set for at least 50% of vaccines procured. Is important to consider that since 2016 the RF is reviewing and implementing the most appropriate processes, indicators and tools to drive continuous improvement of countries and RF demand planning accuracy.	⚠ In progress
SO 4.2 Strengthened immunization services are part of comprehensive, well-run health services	**SO 4.2.1** Number of countries and territories that have dropout rates below 5% between the first and the third dose of DPT vaccine Baseline: 11 in 2013 Goal: 35 in 2020	As of 2017, 21 countries and territories have the DPT1-3 dropout rate under 5%.	⚠ In progress
	SO 4.2.2 Number of countries and territories with coverage above 95% for third dose of DPT vaccine sustained for three or more consecutive years Baseline: 13 in 2013 Goal: 35 in 2020	As of 2017, 5 countries and territories have maintained DPT3 coverage above 95% for three or more consecutive years.	✗ Off track

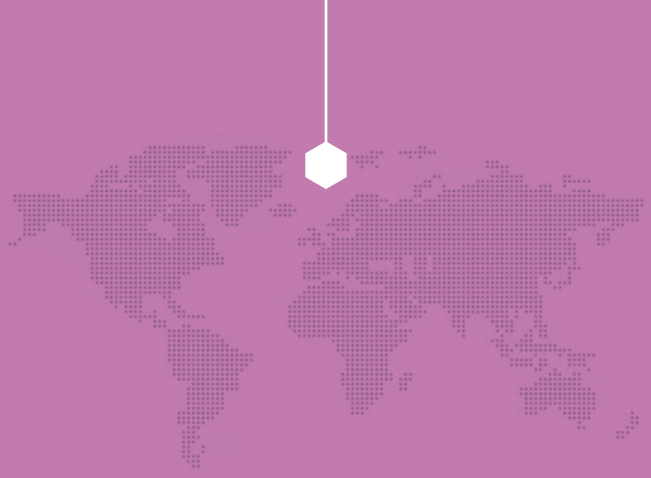
SO 4.2 Strengthened immunization services are part of comprehensive, well-run health services	**SO 4.2.3** Number of countries and territories that have conducted exercises to identify and correct barriers to reaching the unvaccinated or undervaccinated Populations Baseline: 22 in 2013 Goal: 35 in 2020	As of 2017, 23 countries and territories that have conducted exercises to identify and correct barriers to reaching the unvaccinated or undervaccinated populations	✗ Off track
	SO 4.2.4 Number of countries and territories that have held activities to improve the quality of their coverage data and that include these activities in their annual action plans Baseline: 12 in 2013 Goal: 25 in 2020	As of 2017, 24 countries and territories have held activities to improve the quality of their immunization data.	✔ On track
	SO 4.2.5 Number of countries and territories that have a national system for computerized nominal immunization registry Baseline: 3 in 2013 Goal: 10 in 2020	As of 2017, 14 countries have EIR systems implemented.	✔ On track
	SO 4.2.6 Number of countries and territories that report having had a stock-out of a vaccine or related supplies for one full month or more at any level (local, subnational, or national) Baseline: 11 in 2013 Goal: 0 in 2020	As of 2017, 17 countries and territories have reported stock-out for Pneumo conj, Rotavirus, BCG, DPT, Measles, Yellow fever, HPV, IPV, Polio, Tdap, Hep B.	✗ Off track
	SO 4.2.7 Number of countries and territories that have strengthened post-marketing surveillance of vaccines in the Expanded Program on Immunization (EPI) Baseline: 4 in 2013 Goal: 10 in 2020	As of 2017, 40 countries and territories have strengthened post-marketing surveillance of vaccines in the Expanded Program on Immunization (EPI) having a national system to monitor adverse events following immunization.	✔ On track
	SO 4.2.8 Number of countries and territories that hold vaccination activities geared to health workers Baseline: 19 in 2013 Goal: 25 in 2020	As of 2017, 35 countries and territories in the Region have been working to improve the knowledge and skill of their health workers.	✔ On track

CHALLENGES AND ACTIONS NEEDED TO IMPROVE IMMUNIZATION IN THE REGION

The Region currently faces outbreaks of vaccine-preventable diseases such as measles, diphtheria, pertussis and yellow fever which are of public health concern. These disease outbreaks are mainly due to persistent, low vaccination coverage at the local/district level. In 2017, 10% of the countries in the Region reported vaccination coverage levels with the first dose of measles and rubella containing vaccines at lower than 80%. Additionally, the regional coverage with the third dose of diphtheria, pertussis and tetanus (DPT3) vaccine has dropped to 88%, leaving behind approximately 1.8 million children less than one year of age unvaccinated against these diseases. This places the entire Region in a high-risk situation for outbreaks of measles, diphtheria, pertussis and other vaccine-preventable diseases.

This situation should motivate the region to:

1. ensure that everyone is vaccinated especially the most vulnerable including those displace, migrants, moving to urban centres and other mobile population
2. work together with health care systems in order to ensure to extend vaccination services to everyone and reinforce the integrated work
3. Strengthen vaccine-preventable disease surveillance capacities, in order to promptly identify imported or endemic cases. Countries should also make efforts to improve the quality and use of data collected
4. Immunization program should maintain a budget line for vaccine procurement but also ensure adequate resources for operational activities such as mop-up vaccination, social communication, supervision and training
5. promote the social participation, as well the public knowledge about the safety and benefits of the vaccines.



III

Progress Report for the Eastern Mediterranean Region

PROGRESS REPORT FOR 2017

1. INTRODUCTION

The Eastern Mediterranean Vaccine Action Plan, (EMVAP) 2016–2020, developed in line with GVAP was endorsed by the Regional Committee (RC) of the Eastern Mediterranean (Resolution EM/RC62/R.1, October 2015), as a framework for implementation of GVAP in Member States of the Eastern Mediterranean Region. The EMVAP provides guidance for Member States, for prevention and control of vaccine-preventable diseases, from 2016 to 2020 and beyond, by defining the strategic objectives and priority actions for the immunization programmes, taking into account the specific needs of and the challenges facing Member States in the Eastern Mediterranean Region.

The EMVAP includes a monitoring and evaluation framework, the indicators of which are used to monitor implementation of the priority actions of the different strategic objectives as well as the progress towards achieving the goals of the EMVAP. The Resolution EM/RC62/R.1 requires that report on the progress is made and remaining challenges are submitted to the RC every two years starting with 2017. The Regional Director EMR as part of his annual report 2016 for the 64th RC meeting in October 2017 shared with the Member States the progress and challenges in relation to implementation of EMVAP.

2. GOALS OF THE EMVAP:

Goal 1: Meet regional routine vaccination coverage targets at all administrative levels:

By 2020, achieving at least 90% coverage with the third dose of DTP-containing vaccine (DTP3) and the last dose of all other vaccines provided through the national Expanded Programme on Immunization (EPI) among children less than one year of age at national level and at least 80% coverage of these vaccines in every district among the same age group.

Goal 2: Disease elimination and control, including:

a. *Measles elimination:* Interruption of endemic measles virus transmission soonest possible and latest by 2020.

b. *Elimination of Maternal and Neonatal Tetanus:* achieving and sustaining incidence of neonatal tetanus of less than 1/1000 live births in every district in all Member States of the region, soonest possible and latest by 2020.

c. *Hepatitis B reduction:* reducing Prevalence of chronic hepatitis B virus infection to less than 1% among children less than five years of age (EM/RC56/R.5) and verifying achieving the target latest by 2020.

Goal 3: Introducing new vaccines of regional and national priority:

Introducing new vaccines (Rubella, Pneumococcal conjugate and rotavirus vaccines) soonest possible in all countries with demonstrated disease burden.

Goal 4: polio eradication:

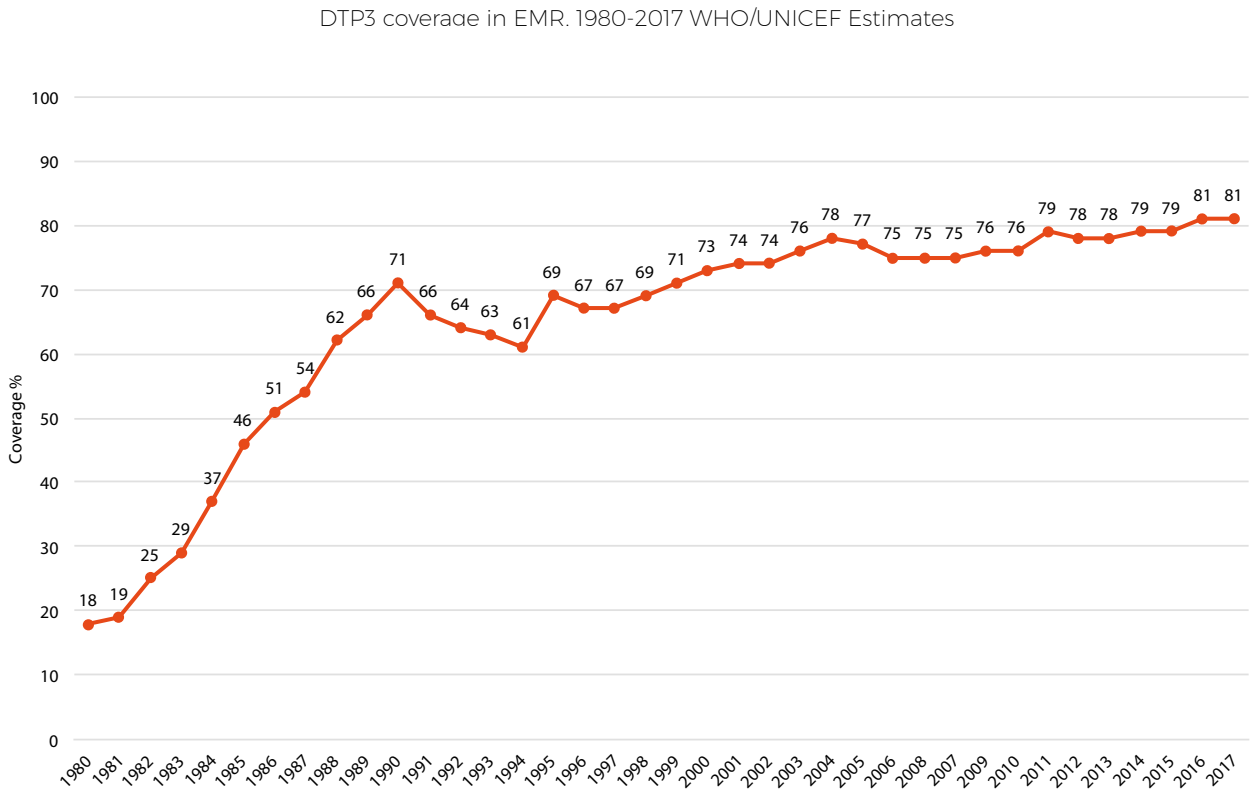
Achieving and maintaining polio-free status (this goal is dealt with by a separate programme in EMRO).

3. CURRENT SITUATION IN THE EASTERN MEDITERRANEAN REGION

Goal 1: Routine immunization coverage

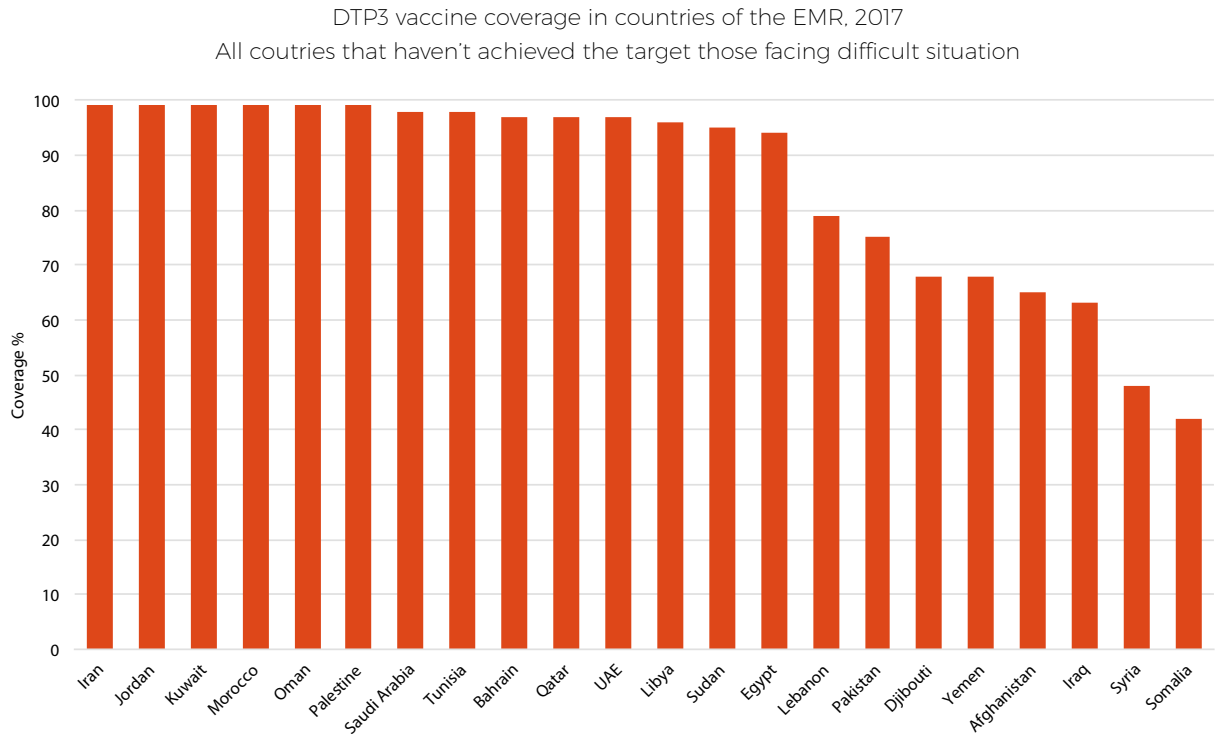
Since WHO launched the Expanded Programme on Immunization (EPI) in 1974, the Eastern Mediterranean Region (EMR) has achieved remarkable improvement in the routine vaccination coverage. Based on WUENIC, the regional coverage with the third dose of diphtheria/ tetanus/ pertussis-containing vaccines (DTP3) increased from only 18% in 1980, to 79% in 2011. However, with the political turmoil and subsequent humanitarian emergencies in several countries in the region since early 2011, the regional DTP3 coverage dropped to 78% in 2012 and 2013. A steady progress has been made thereafter and DPT3 coverage reached 79% in 2014 & 2015 and then increased to 81% in 2016 & 2017. Considering the magnitude of humanitarian emergencies being faced in the region, where by eight out of 22 countries are effected, a drop of 1 % in DPT3 coverage in 2012 & 2013 and steadily increasing upto 81% in 2017 demonstrates the resilience of immunization programmes in EMR (Figure 1).

Figure 1 : DTP3 vaccine coverage trend in EMR between 1980 and 2017



14 out of the 22 Member States in EMR, achieved the Goal 1 of EMVAP (i.e. at least 90% DTP3 coverage at national level) with range of 94%-99% during 2017 (Figure 2). Seven out of eight member states which could not achieve this goal are facing humanitarian emergencies and or difficult situations.

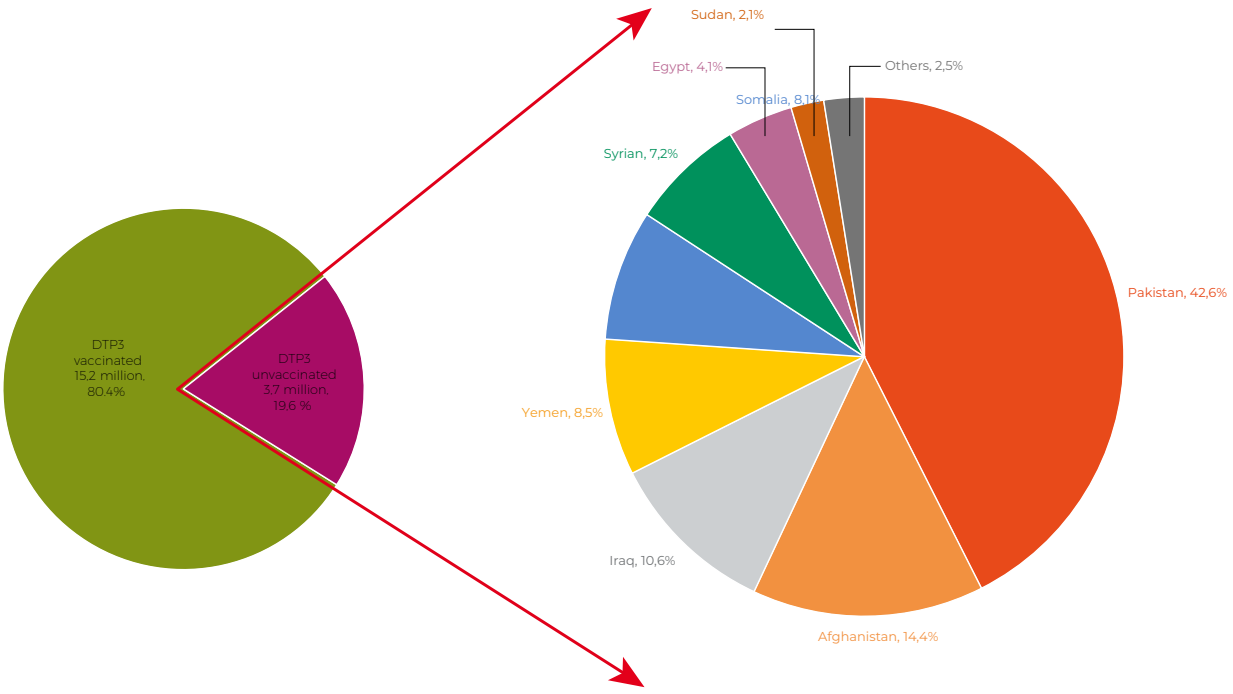
Figure 2 : DTP3 vaccine coverage in EMR Member States 2017



10 out of 22 Member States have achieved the coverage goal of at least 80% DTP3 at district level and three more Member States are close to achieving it. However for Member States facing humanitarian emergencies, significant efforts are required to improve the district level coverage goal in specific districts.

During 2017, 19.6% of target infant population (3.7 million infants) in the region did not receive their third dose of DTP vaccine, more than 98% of these infants are in the Member States with humanitarian emergencies (Figure 3).

Figure 3 : Geographical distribution of infants that have not received their third dose of DTP vaccine in 2017



Despite the great challenges faced, several Member States in the region, including those suffering from internal challenging situations /humanitarian crisis, succeeded in maintaining the strong immunization programme and further improving as in the case of Sudan and Syria. However in Yemen, because of deteriorating security situation, a drop in DPT3 % coverage was estimated. (Table 1). The governments' commitment in those countries and the population demand for vaccines contributed to maintaining immunization coverage to a certain level which could have been otherwise dropped significantly in the wake of situation. (Annex 1)

Table 1 : DTP3 % coverage in EMR Member States 2016 & 2017 comparison

MEMBER STATE	2016	2017
Afghanistan	65	65
Bahrain	99	97
Djibouti	68	68
Egypt	95	94
Iran	99	99
Iraq	63	63
Jordan	98	99
Kuwait	99	99
Lebanon	79	79
Libya	97	96
Morocco	99	99
Oman	99	99
Pakistan	75	75
Qatar	98	97
Saudi Arabia	98	98
Somalia	42	42
Sudan	93	95
Syria	42	48
Tunisia	98	98
UAE	99	97
Yemen	71	68

Source: WUENIC 2017 released in July 2018

Goal 2: Disease elimination and control

a. Measles elimination

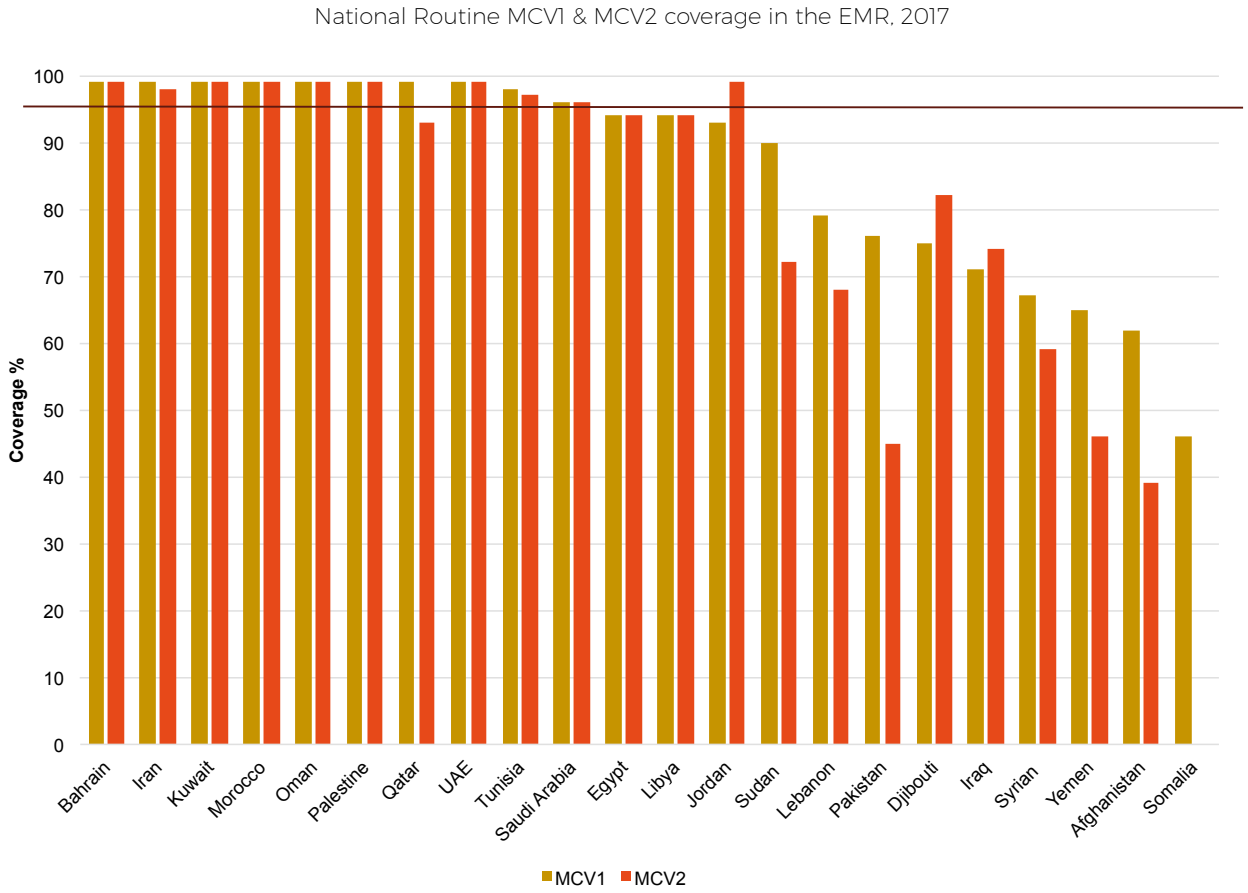
Measles elimination target has been re-set as 2020 in the EMVAP, as the earlier set target of achieving measles elimination by 2015 could not be achieved.

To achieve measles elimination the Eastern Mediterranean Regional Office (EMRO) developed a regional strategy with three main components: (1) conduct nation-wide measles catch-up vaccination campaign targeting wide age range; (2) achieve >95% vaccination coverage with two doses of measles-containing vaccine (MCV) in all districts through routine immunization, supplemented by supplementary immunization activities (SIAs) where needed; (3) conduct high-quality, case-based surveillance supported by national proficient laboratory.

Member States have been implementing these strategies with various levels of success. Based on WUENIC 2017, out of the 22 EMR Member States, estimated MCV1 coverage was ≥95% in 10 (46%), 90%–94% in four (18%) and <90% (range 46%–79%) in eight (36%) Member States (Figures 4 & 5). Of the 10 countries with ≥95% MCV1 coverage, five (23% of all countries) reported >95% coverage in all districts. In the same year, among the 21 countries with a routine second dose of measles vaccine, MCV2 coverage was >95% in 10 (48%), 90%–94% in three (14%), and <90% (range 39-82%) in eight (38%).

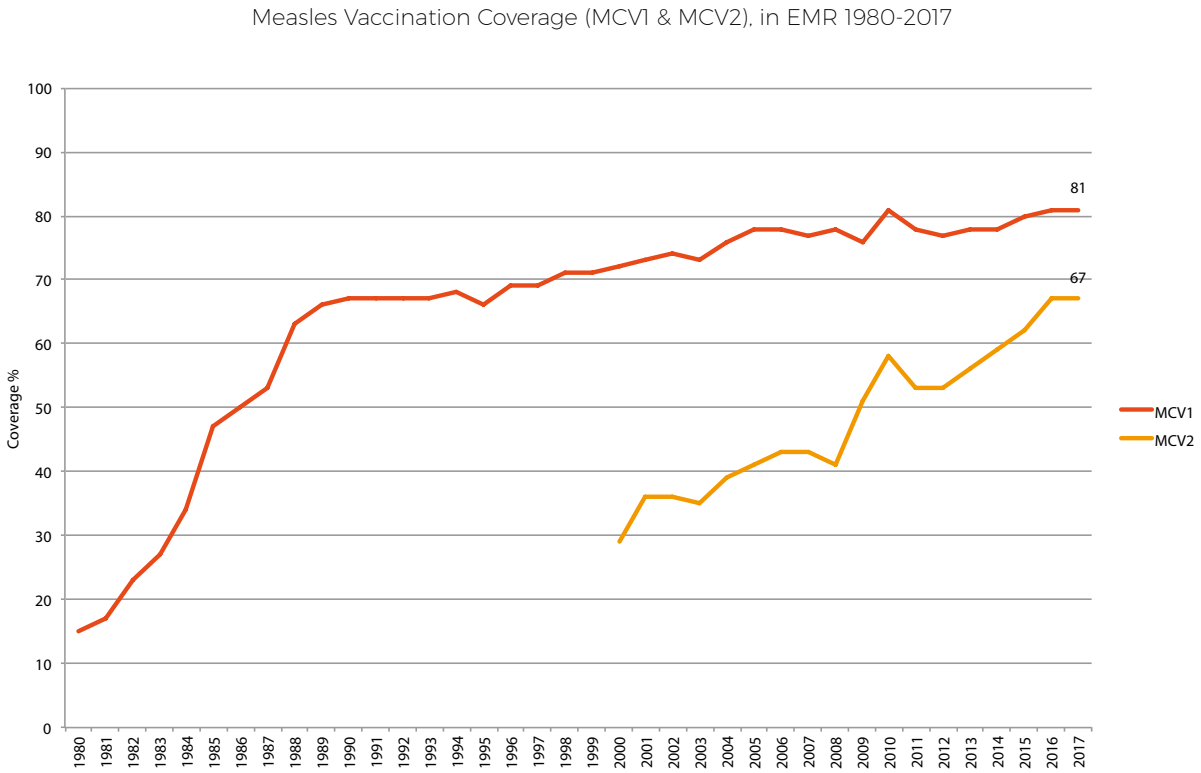
Measles SIAs have been implemented in 17 Member States during 2015-2017, during which >115 million doses of MCV were administered.

Figure 4 : MCV1 & MCV2 coverage, 2017



Source: WUENIC, 2017

Figure 5 : MCV coverage trend in EMR between 1980 and 2017



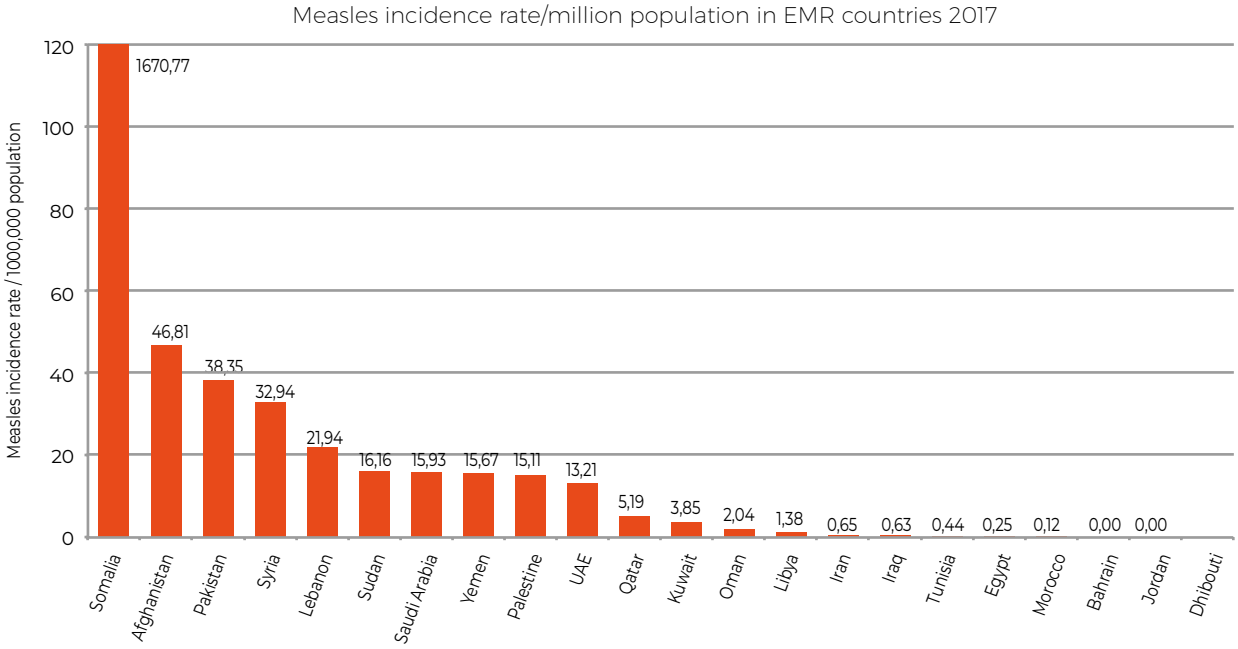
Source: WUENIC, 2017

Measles case-based surveillance has been fully implemented in the Member States of EMR, with the exception of Djibouti and Somalia. The surveillance systems in these 20 Member States is supported by well-functioning national labs backed up with global and regional laboratory network. Measles surveillance performance indicators showed that the majority of countries met surveillance standards.

Incidence of measles in the EMR Member States

In EMR, during 2017, seven member states had measles incidence rate <1/million. Two member states, Bahrain and Jordan, had no endemic cases for past few years (Figure 6). In Oman and Palestine, localized outbreak of measles was reported in 2017, with transmission for <12 months. Somalia has been facing major outbreak of >23,000 cases (out of the 33,000 for the whole region). Laboratory confirmation was available for only two out of seven states of Somalia.

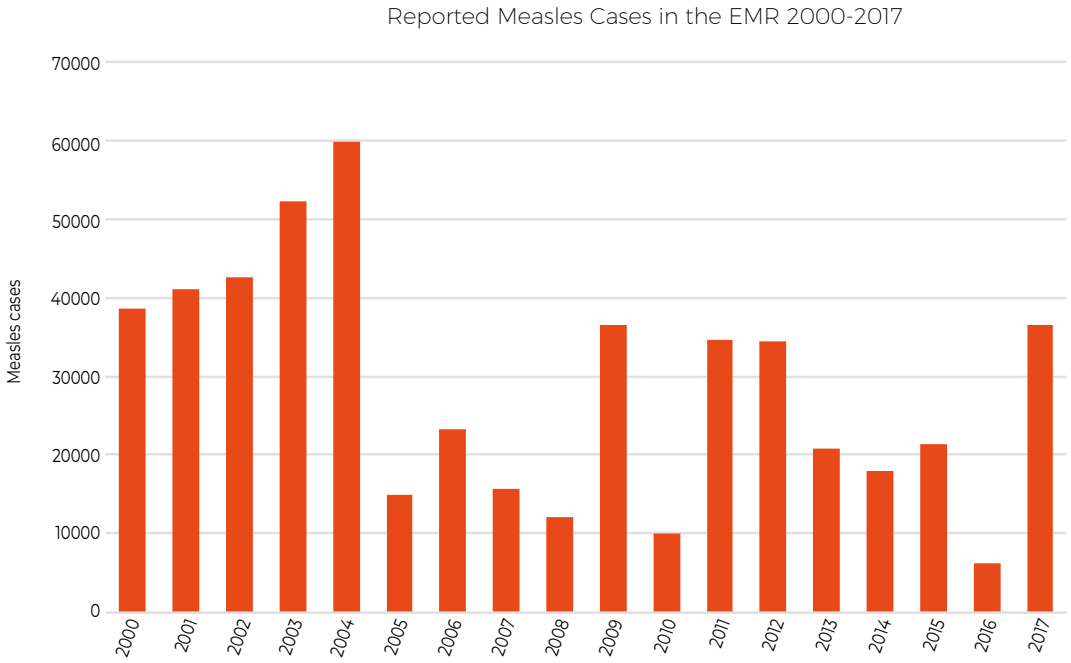
Figure 6 : Measles incidence rate per million in EMR in 2017



Number of measles cases

The number of measles cases have shown a periodic trend of increase as is expected considering the epidemiology of measles and the low coverage with MCV in some Member States. (Figure 7) During 2017, annual reported measles incidence decreased by 89% and annual estimated measles deaths decreased by 79% compared to 2000.

Figure 7 : Reported measles cases in EMR between 1995 and 2017



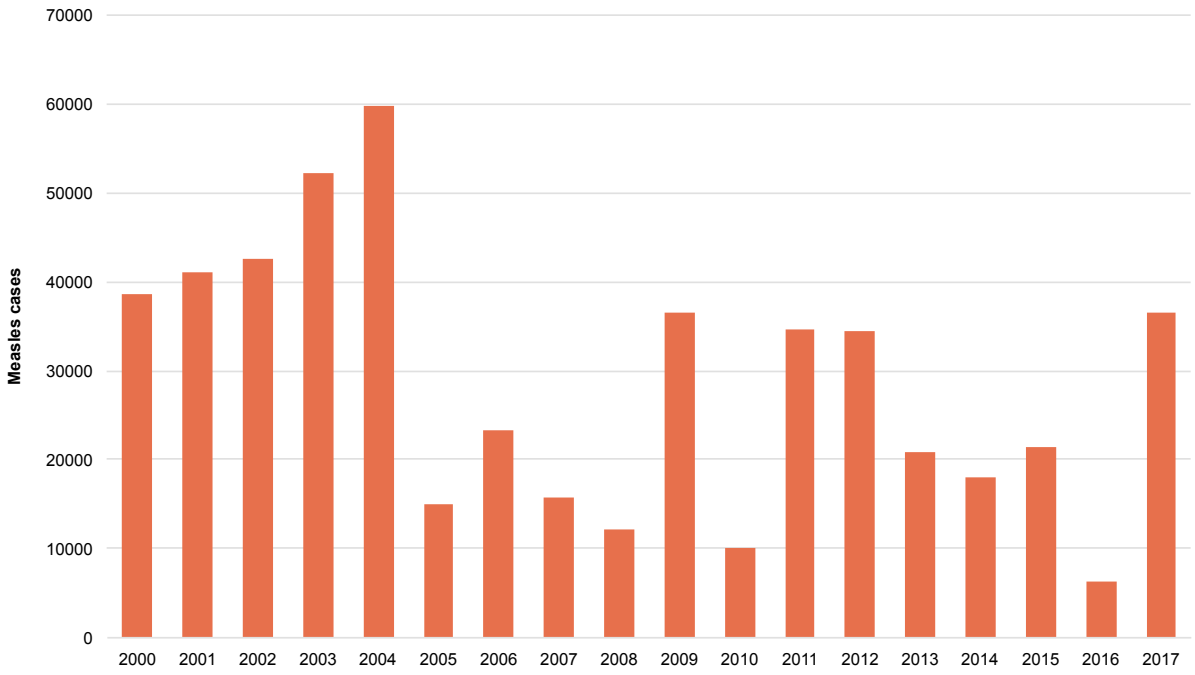
Source: JRF

Rubella vaccine use and rubella incidence in Member States of the EMR

17 out of 22 Member States in EMR have included rubella-containing vaccine in their routine immunization programme. The incidence rate of rubella per million in the EMR Member States ranged from zero in three countries to 6.22/million in Sudan, while 20 Member States have rubella incidence < 5/million (Figure 8).

Figure 8 : Rubella incidence rate per million in 2017 in EMR

Incidence rate/million of Rubella cases (confirmed, Epi linked and clinically compatible) in EMR countries 2017



Source: WUENIC, 2017

Towards achieving measles & rubella elimination

There is no regional target for rubella/ Congenital Rubella Syndrome (CRS) elimination, though 13 Member States have developed national targets for rubella/CRS elimination.

Based on the Member States progress with regards to measles elimination, Bahrain is ready for verification of measles elimination (Figure 9).

Achieving the target of measles elimination is challenged, mainly, by the current security and humanitarian situation in several countries and the unpredictable mass population displacements and resettlements that complicate the delivery of routine vaccination services and planning and implementation of SIAs. The inadequate visibility of the measles elimination target, the inadequate managerial capacity and the competing public health priorities in some Member States are major challenges.

The inadequate financial resources and the long time required to fulfil partners requirements for funding proposals to implement the planned SIAs, had significantly contributed to delayed implementation of the SIAs and, hence, accumulation of the susceptible population. The restriction of funding by partners of the follow up SIAs to the age group to 9-59 months, without considering epidemiology of the diseases, resulted in inadequate prevention and control of ongoing transmission and continuation of the outbreaks.

Conducting SIAs in conflict settings and in areas with no local government, requires establishing close linkages with local communities. In addition, coverage validation of all SIAs is required to be conducted to address coverage gaps in the SIAs and to ensure that appropriate planning for future SIAs is done. However, because of various reasons, mainly related to security such validations of SIAs had not often been of desired quality. Apart from tackling the security related issues with innovative approaches, high level advocacy with the governments and partners, to increase visibility of measles elimination target and increasing allocation of necessary resources, is highly required.

Figure 9 : Progress in regard to measles elimination in 2017

Country	Measles incidence rate/ million (2017)	MCV1 coverage (2017)	MCV2 coverage (2017)	Adequacy of Surveillance
Bahrain	0.00	99	99	
Jordan	0.00	93	99	
Palestine	15.11	99	99	
Oman	2.04	99	99	
Morocco	0.12	99	99	
Tunisia	0.44	98	97	
Iran	0.65	99	98	
Egypt	0.25	94	94	
Qatar	5.19	99	93	
Kuwait	3.85	99	99	
UAE	13.21	99	99	
Saudi Arabia	15.93	96	96	
Iraq	0.63	71	74	
Libya	1.38	94	94	
Yemen	15.67	65	46	
Sudan	16.16	90	72	
Lebanon	21.94	79	68	
Syria	32.94	67	59	
Pakistan	36.67	76	45	
Afghanistan	46.81	62	39	
Djibouti	3.50	75	82	
Somalia	1670.77	46	NA	

Color coding:				
	Brown: 0/million	Brown: ≥ 95%	Brown: ≥ 95%	Brown: adequate surveillance
	Orange: <5/million	Orange: 90-94%	Orange: 90-94%	Orange: functioning system
	Red: >5/million	Red: <90%	Red: <90%	Red: weak surveillance

Formation of EM Regional Measles and Rubella Elimination Verification Commission

The Eastern Mediterranean (EM) Regional Verification Commission (RVC) for Measles and Rubella Elimination has been established by the Eastern Mediterranean Regional Office (EMRO) as an independent expert body. The mission of RVC is to evaluate the documentation submitted by National Verification Committees (NVCs) for Measles and Rubella Elimination in Member States of EMR and to verify the elimination of measles and rubella in the Region. The vaccine-preventable diseases and immunization (VPI) unit of the EMRO serves as the RVC secretariat.

The RVC members include experts in the field of Pediatric /Epidemiology/ Public Health / laboratory and are from academia, UN and other international agencies, independent from national immunization programmes in accordance with the Terms of Reference of RVC.

b. Maternal and neonatal tetanus elimination

The EMR has made substantial progress toward reaching the global goal of maternal and neonatal tetanus (MNT) elimination. However, five out of the 22 EMR countries (Afghanistan, Djibouti, Somalia, Sudan and Yemen), that haven't achieved this goal, are yet to eliminate MNT. One country (Pakistan) has partially achieved this goal, as its largest province (Punjab) with more than 55% population of the country was certified to have eliminated measles in 2016.

The financial constraints and inability to allocate/mobilize required resources for implementation of the required Tetanus Toxoid (TT) SIAs in the high risk districts, is the main factor behind the failure in achieving this long delayed goal. As all the Member States that have not achieved this goal in the EMR are Gavi-eligible countries, financial support by Gavi might be a possible solution. This is going to be relatively small investment by Gavi/donors but can lead to achievement of MNT elimination.

c. Hepatitis B

In October 2009, Regional Committee (RC) of the Eastern Mediterranean passed a resolution adopting a regional Hepatitis B control goal to "reduce prevalence of chronic Hepatitis B virus infection to <1% among children aged <5 years by 2015" (EMRC56R.5).

EMRO has developed a regional strategy for achieving Hepatitis B control target with the following components:

1. Strengthening routine infant hepatitis B immunization:
   - Provision of a birth dose of Hepatitis B vaccine to all newborns within the first 24 hours of life
   - Increasing routine coverage with HepB3 to at least 90% and to complete the schedule during the first 6 months of life
2. Ensuring vaccine effectiveness
3. Advocacy and communication
4. Monitoring and evaluation of the vaccination programme and progress towards achieving the goal

EMRO has been helping EMR countries in developing and implementation of national strategies to achieve the regional hepatitis B control goal. The number of countries that are implementing Hepatitis B birth dose has increased from 13 in 2009 to 18 countries in 2017, including three countries (Afghanistan, Egypt and Pakistan) that have partially introduced the birth dose. The main challenge behind the delayed introduction of the birth dose lies with the financial implication for the Gavi-supported countries since the HepB vaccine birth dose is not supported by Gavi.

Available information, through serosurvey and monitoring the programme performance, indicates that this target might have already been achieved in many countries. EMRO has developed regional guidelines to verify achieving this goal. Verification of reaching this goal, through implementing hepatitis B serosurveys, is still to be done in most of the countries.

Goal 3: Introducing new vaccines of regional and national priority

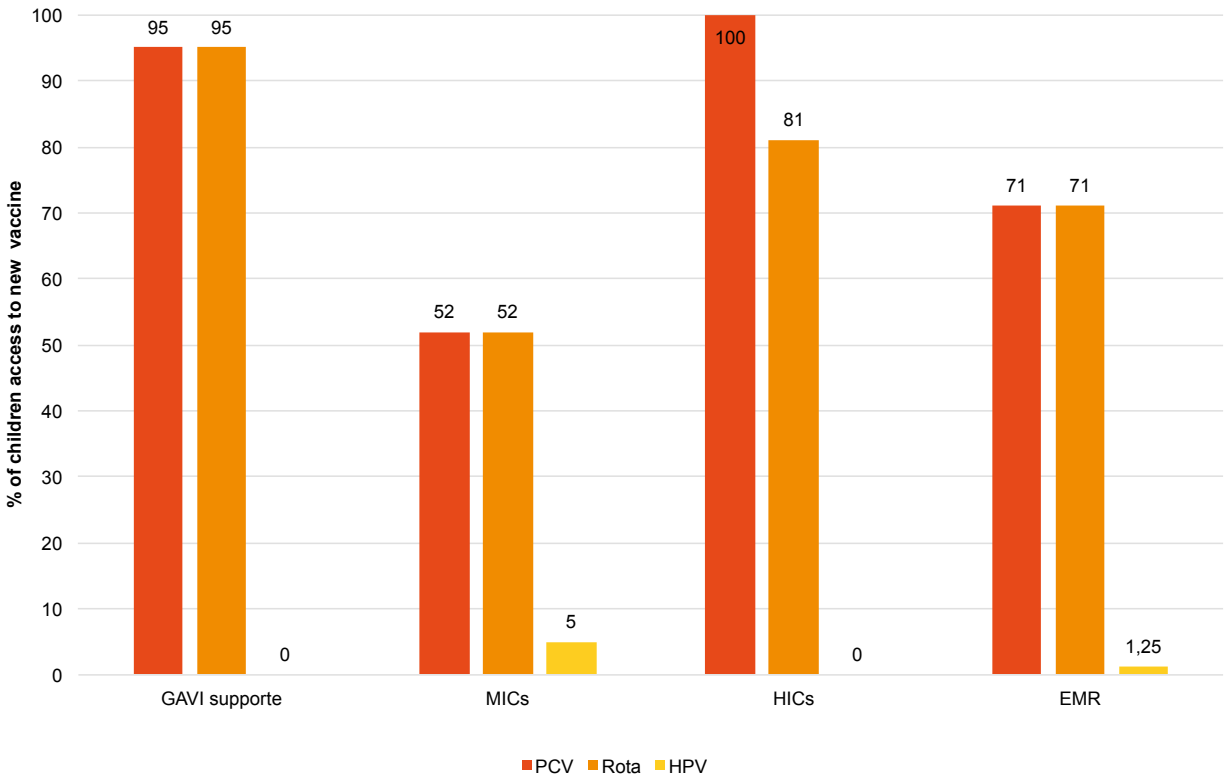
During the period 2011-2017, 39 new vaccines introductions in total have occurred in the EMR. So far, Haemophilus Influenzae type B (Hib) vaccine has been introduced in the national immunization programme in all EMR countries. Pneumococcal conjugate vaccine (PCV) has been introduced in 16 countries and rotavirus vaccine in 14 countries. IPV has been introduced in 22 countries and introduction in Egypt was delayed because of the global shortage of IPV but the vaccine has been finally introduced on 22 July 2018.

The support of Gavi, the Vaccine Alliance, to the eligible countries and the Governments' commitments to fulfilling the co-financing components, have been pivotal in facilitating introduction of new vaccines in those countries. The exceptional commitment of the Governments of the middle-income countries to fully finance the introduced new vaccines is worth highlighting.

Nevertheless, Middle-income countries (MICs) specially the Lower-middle-income countries (LMICs) continue to face difficulty in introducing the new vaccines due to the combined effect of the high cost of the vaccine and the inadequate allocation of the necessary domestic resources. For example, children born in countries that have introduced Pneumococcal conjugate vaccine (PCV) is only 15% in MICs compared to almost 100% in the high-income countries (HICs) and Gavi-eligible countries (Figure 10). While high-income countries can afford the cost and Gavi-eligible countries are supported by Gavi, children borne in the MICs of the EMR continue to suffer from inequity in access to new vaccines.

Figure 10: Proportion of children having access to new vaccines in the Eastern Mediterranean Region 2017

Proportion of children born in countries that introduced the new vaccines according to income categories: current and expected for 2018



4. SUSTAINING THE IMMUNIZATION PROGRAMME UNDER THE HUMANITARIAN EMERGENCY SITUATION IN THE EMR: CHALLENGES AND SUCCESS:

The majority of the EMR countries are currently suffering, either directly or indirectly, from acute or protracted humanitarian emergency situation. In addition to the grave impact of the acute humanitarian emergency on the host countries, the massive refugee influx has resulted in overstretching of the health systems of neighboring countries.

The impact of the humanitarian emergency situation on the immunization programmes can easily be depicted by the fact that almost all EMR countries, that have not achieved the GVAP/EMVAP target of routine immunization coverage, are those affected by acute or protracted emergency situation.

Despite this sad situation, remarkable efforts continued to be devoted to maintaining the immunization programmes in the conflict-affected countries and reaching every child with the life-saving vaccines, even under the active war and the life-threatening situations. While concerted partners support has been a key factor for availing the required resources in some countries, governments' commitment and allocation of national resources was exceptional in several countries. The devotion of the health workers at the grass root level and their relentless efforts to reach the children in the hard to reach areas with the life-saving vaccines, and the demand of the communities for vaccines and seeking vaccination services where available remain major success elements.

In EMR during 2017, 30 million people were displaced. These include nine million refugees originating from EMR and taking refuge in neighboring countries and 21 million internally displaced population. There are 62 million people in need of health care as a result of emergencies.

Weakened health systems and critical shortages in health care workers, medicines, diagnostics and vaccines is being witnessed in countries facing humanitarian crisis. It is estimated that 60% of hospitals in Syria were closed, destroyed or are partially functional, while 50% of hospitals in Yemen non-functional. 60% of health care workers in Syria either left the country or unfortunately died.

5. CHALLENGES FACING ACHIEVING THE IMMUNIZATION GOALS IN THE EMR

EMR is facing a diversity of challenges which delays achieving the regional immunization goals. Security and humanitarian emergency situation in many EMR countries creates difficulties achieving the immunization targets. It affects implementation of planned activities, especially the outreach and mobile activities for improving routine vaccination coverage and implementation of supplementary immunization activities in several countries. It also significantly increases the operations cost of all activities.

Inadequate managerial capacity, rapid turn-over of national staff that's further constrained by the multiple competing priorities and the needs for facing the humanitarian emergency situation in many Member States hinder the achievement of the immunization programme.

Inadequate attention to or visibility of the immunization goals and lower priority given by the respective authorities to routine immunization in view of the more pressing needs in some countries, prevent addressing the needed attention to the performance of the immunization activities.

Uncertainty about the target population in several countries due to inadequate civil registration systems, poor/old census data and continuous internal and/or external population movement pose a great challenges to the immunization data quality.

Inadequate financial resources: the overall share of total domestic expenditure for the vaccination programmes has increased in most of the EMR Member States with introduction of the new vaccines and implementation of disease eradication and elimination strategies. However, that expenditure has not reached the level sufficient for implementation of the strategies and activities necessary for achieving the global and regional immunization goals, especially with the financial requirements for implementation of the strategies related to measles/rubella elimination, MNT elimination and introduction of new vaccines.

Occasional global vaccine shortage resulted in delayed introduction of some vaccines (e.g. IPV) and delayed implementation of SIAs (e. g. MMR and Yellow fever).

6. TOWARDS ACHIEVING THE IMMUNIZATION GOALS IN THE EMR

Immunization is undeniably one of the most successful and cost-effective public health interventions available. Tremendous progress has been made to improve immunization coverage and introduce new vaccines in countries of the EMR. While many challenges remain, including the acute humanitarian emergency situation in several countries, there are reasons to be optimistic. Political will and government funding for immunization is growing, even under the severe economic constraints posed by the internal political change in several countries, and partners' support to the countries in high need is growing. More life-saving vaccines are available and more new ones are on the horizon. While children are the focus of routine immunization systems, more countries are introducing vaccines intended for adolescents and adults to benefit individuals throughout life and help reduce the burden of cancer and other major causes of deaths.

The EMVAP/GVAP provides a strong framework for overcoming challenges toward achieving immunization goals in the EMR. Comprehensive multi-year plans, in line with the EMVAP, are being developed/updated in the countries. While WHO and other development partners should continue to fulfil their commitments to providing the required support, governments, communities and individuals must work collectively to put these plans into action.

ANNEX - 1 NATIONAL COVERAGE SCORECARDS IN EMR, WUENIC 2017

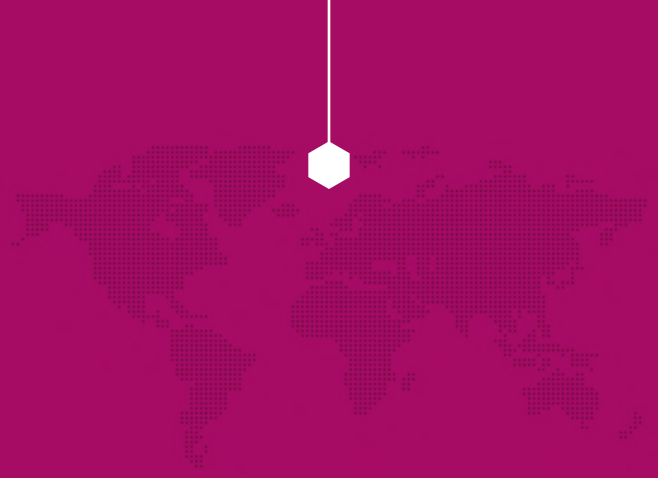
Country	DTP		MCV			Drop-out	
	DTP1	DTP3	MCV1	MCV2	MCV1 95% in all district	Drop out DTP1-DTP3	Drop out MCV1-MCV2
Afghanistan	73	65	62	39	No	8	23
Bahrain	98	97	99	99	Yes	1	0
Djibouti	74	68	75	82	No	6	-7
Egypt	95	94	94	94	No	1	0
Iran	99	99	99	98	Yes	0	1
Iraq	73	63	71	74	No	10	-3
Jordan	99	99	93	99	No	0	-6
Kuwait	99	99	99	99	No	0	0
Lebanon	82	79	79	68	No	3	11
Libya	99	96	94	94	No	3	0
Morocco	99	99	99	99	No	0	0
Oman	99	99	99	99	Yes	0	0
Pakistan	83	75	76	45	No	8	31
Palestine	99	99	99	99	Yes	0	0
Qatar	98	97	99	93	No	1	6
Saudi Arabia	99	98	96	96	No	1	0
Somalia	52	42	46	NA	No	10	NA
Sudan	98	95	90	72	No	3	18
Syrian	63	48	67	59	No	15	8
Tunisia	99	98	98	97	No	1	1
UAE	97	97	99	99	No	0	0
Yemen	76	68	65	46	No	8	19

DTP
≥90%
70% to <90%
<70%

MCV
≥90%
90% to <95%
<90%

Drop-out
<5%
5% to <10%
≥10% or negative

Source: WUENIC 2017 released in July 2018v



IV

Progress Report for the European Region

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ABBREVIATIONS

AFP	acute flaccid paralysis
BCG	Bacille Calmette-Guerin vaccine for tuberculosis
CRS	congenital rubella syndrome
DTP1	diphtheria-tetanus-pertussis-containing vaccine, first dose
DTP2	diphtheria-tetanus-pertussis-containing vaccine, second dose
DTP3	diphtheria-tetanus-pertussis-containing vaccine, third dose
ETAGE	European Technical Advisory Group of Experts on Immunization
EVAP	European Vaccine Action Plan 2015-2020
GVAP	Global Vaccine Action Plan
HepB3	hepatitis B vaccine, third dose
Hib	Haemophilus influenzae type b
HIC	high-income country
HPV	human papillomavirus
IB-VPD	invasive bacterial vaccine-preventable diseases
IPV	inactivated polio vaccine
LMIC	lower-middle-income country
MIC	middle-income country
MCV1	measles-containing vaccine, first dose
MCV2	measles-containing vaccine, second dose
NITAG	National Immunization Technical Advisory Group
OPV	oral polio vaccine
PCV	pneumococcal conjugate vaccine
PEF	poliovirus essential facility
Pol3	polio-containing vaccine, third dose
RCC	Regional Commission for the Certification of Poliomyelitis Eradication
RV	rotavirus vaccine
RVC	Regional Verification Commission for Measles and Rubella Elimination
SAGE	Strategic Advisory Group of Experts on Immunization
SDGs	Sustainable Development Goals
TIP	Tailoring Immunization Programmes
UMIC	upper-middle-income country
VDPV	vaccine-derived poliovirus
WPV	wild poliovirus

EXECUTIVE SUMMARY

A mid-term review was undertaken to assess progress made by the WHO European Region (the Region) in implementing the European Vaccine Action Plan 2015-2020 (EVAP) as of its mid-point, which was the end of 2017. This report documents progress with a focus on the EVAP goals and reflects upon the key challenges to further progress in the implementation of the EVAP.

Though the Region has maintained polio-free status, all of its Member States remain at risk for importation or in some cases re-emergence of poliovirus, with three Member States at high risk for its subsequent spread. To maintain the Region's polio-free status and in preparation for certification of global eradication, all Member States need to: enhance and/or sustain high vaccination coverage to maintain high population immunity; achieve and/or sustain high-quality surveillance; and be prepared to respond promptly in case of an importation or re-emergence of the virus. Member States with certified poliovirus essential facilities (PEFs) will also need to maintain a high level of vigilance to avoid breaches in containment and to mitigate the risk of spread, should a breach occur.

While the Region has made steady progress towards measles and rubella elimination in the last few years, the available evidence suggests that the Region is not on track to be verified as having eliminated measles by 2020. Periodic outbreaks continue to occur in the Region. Failure in some Member States to achieve and sustain high immunization coverage suggests that they may be at risk of re-establishing transmission or remaining endemic. The quality of surveillance remains suboptimal in several Member States and may prove to be an impediment to verification of elimination.

A goal for the control of hepatitis B infection through vaccination was established in the EVAP, but the indicators and targets for monitoring these goals have only recently been established (as part of the Action plan for the health sector response to viral hepatitis in the WHO European Region). A Working Group of the European Technical Advisory Group of Experts on Immunization (ETAGE) will assess progress and validate achievement of the targets. Considering the already low regional prevalence of HBsAg carriage and the high coverage with vaccination and/or screening and prevalence, this goal could represent an early win for the Region.

Achieving and maintaining high and equitable coverage underpins vaccine-preventable disease eradication, elimination and control goals. There has been a decline since 2015 in the number of Member States whose coverage with the third dose of diphtheria-tetanus-pertussis-containing vaccine (DTP3) is ≥ 95%. Consequently, there is concern about achieving the EVAP target of 48 Member States having reached this level by 2020. Data to monitor equity is only being reported to WHO by about half of Member States (26/53 in 2017) and achievement of the target of ≥ 90% DTP3 coverage in ≥ 90% districts could only be documented in 14 Member States in 2017. Analysis of disaggregated data, and periodic surveys and special studies will be required to monitor inequity and take measures to address it. The WHO Regional Office for Europe (Regional Office) is in the process of developing a guidance document to assist Member States with monitoring and addressing inequity. Available data show that vaccine hesitancy (as defined by the Strategic Advisory Group of Experts on Immunization[2]) has contributed to declining coverage of some vaccines at the national level in some Member States and can exacerbate inequitable coverage. Further in-depth analyses of data at the country level may provide insights into the root causes. Application of the Tailoring Immunization Programmes (TIP) approach helps in achieving a better understanding of the reasons for low uptake and in designing a tailored approach to correcting the problem. Evidence also indicates that vaccine stockouts have contributed to a low or declining coverage in some Member States. The reasons for stockouts vary between countries but all require remedial actions.

There has been substantial progress in establishing national immunization technical advisory groups (NITAGs) in the Region and in enhancing their capacities to provide credible, well-informed recommendations to the national governments based on a thorough review of the available evidence. However, further support from WHO or other partner agencies would be required to further enhance these capacities.

WHO supports a network of sentinel sites that conduct surveillance for invasive bacterial vaccine-preventable-diseases (IB-VPD) and rotavirus diarrhoea that have generated data to support decisions on rotavirus vaccine introduction. However, surveillance capacity would need to be enhanced to document the impact of vaccines. These data may become important for sustained financing in the face of other competing priorities.

[2] Report of the SAGE working group on vaccine hesitancy. Available at: http://www.who.int/immunization/sage/meetings/2014/october/1_Report_WORKING_GROUP_vaccine_hesitancy_final.pdf.

The Member States of the European Region are on track to achieve financial self-sufficiency for procuring routin vaccines by 2020. However, concerns remain about current funding mechanisms in some of the MICs to adequately finance their immunization programmes to achieve the vision and goals of the EVAP, including but not limited to the introduction of new vaccines. On average, these countries spend a lower proportion of their gross domestic product (GDP) and total government expenditures on health as compared to high-income countries and a few allocate a relatively low percentage of their current health expenditures to procuring vaccines despite the high return on investment in immunization.

The available data shows that MICs, without donor support are lagging behind and unless corrective measures are taken, the decline or stagnation in their performance could pose a threat to the achievement of the EVAP goals and targets.

INTRODUCTION

The European Vaccine Action Plan 2015–2020 (EVAP) was adopted unanimously at the 64th session of the WHO Regional Committee for Europe [1] and envisions a Region free from vaccine-preventable diseases, where all countries provide equitable access to high-quality, safe, affordable vaccines and immunization services throughout the life-course. It was developed through a consultative process with the Member States of the WHO European Region (the Region). It sets a course to reach its vision and goals for immunization and control of vaccine-preventable diseases, by defining objectives, priority action areas and indicators, considering the specific needs and challenges of the Region's Member States. The EVAP complements the Global Vaccine Action Plan (GVAP) and is in line with Health 2020 and other key regional health strategies and polices.

It is widely recognized that immunization has brought about a remarkable reduction in child mortality in the WHO European Region over the past few decades and is one of the best buys not only in health but for sustainable development. Through adoption of the EVAP, the Member States of the Region made an unprecedented pledge to ensure long-term domestic funding of and commitment to immunization. If the vision and goals outlined in the EVAP are achieved, a recent analysis suggests the economic benefits for the period 2011-2020 in the nine low- and middle-income countries [3] would amount to US$ 5 billion, with a return on investment of US$ 5 for every US$ 1 invested [2].

Member States agreed on a set of targets as part of the monitoring and evaluation framework to periodically evaluate and monitor progress towards the EVAP goals and objectives [3]. The robust monitoring and evaluationframework also ensured that all stakeholders in the Region adopt a shared approach to optimize their efforts in protecting the health of individuals in the Member States.

This midterm report presents progress against the goals, objectives and targets of the EVAP up to December 2017, using 2014 as the baseline year, to objectively reflect key challenges in the Region. The assessment is based on a desk review and analysis of data reported to WHO through the WHO/UNICEF Joint Reporting Form (JRF) as well as other publicly available documents and reports, including the reports of the Regional Commission for the Certification of Poliomyelitis Eradication (RCC) and the Regional Verification Commission for Measles and Rubella Elimination (RVC). Based on this report, the European Technical Advisory Group of Experts on Immunization (ETAGE) will propose interventions to address the identified priorities and challenges and ensure that all of the ambitious targets of EVAP are met by 2020. This report provides an opportunity for all stakeholders in the Region to reflect on the immunization achievements thus far and provides the basis to renew their commitment to the goals of the EVAP to ensure that the benefits of immunization do indeed reach all, thereby contributing to achievement of the EVAP vision of a Region free of vaccine-preventable diseases.

This report focuses on the EVAP goals and targets but the narrative section under each goal provides information on the relevant EVAP objectives as well.

[3] Armenia, Azerbaijan, Georgia, Kyrgyzstan, Republic of Moldova, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

PROGRESS TOWARDS EVAP GOALS

This report focuses on the EVAP goals and targets but the narrative section under each goal provides information on the relevant EVAP objectives as well.

Figure 1: Regional progress towards EVAP goals, 2017

Goal 1	Sustain polio-free status	
Goal 2	Eliminate measles and rubella	
Goal 3	Control hepatitis B infection	
Goal 4	25 countries will have introduced the HPV vaccine	
Goal 5	Make evidence-based decisions about introduction of new vaccines	
Goal 6	Achieve financial sustainability of national immunization programmes	

Achieved or on track

At risk

Not achieved

Validation pending

CHAPITRE 1

GOAL 1: SUSTAIN POLIO-FREE STATUS

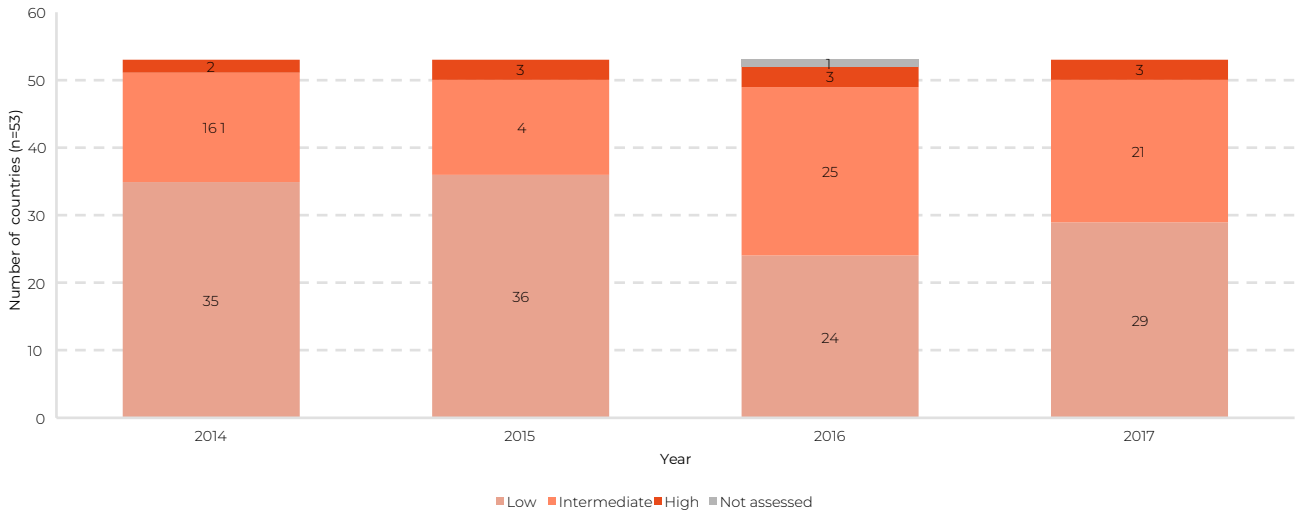
Target: No wild poliovirus transmission re-established in the Region

At its 32nd meeting held in May 2018, the RCC concluded that based on available evidence there was no wild poliovirus transmission in the Region in 2017. Though the Region has maintained its polio-free status since 2002, it continues to be at risk for the introduction of wild poliovirus and emergence of vaccine-derived polioviruses. Following the successful switch from trivalent to bivalent oral polio vaccine (OPV) in the OPV-using countries in the Region in 2016, the risk of emergence of vaccine-derived poliovirus (VDPV) type 2 has been reduced. This report summarizes the key findings of the RCC 2018 meeting [4].

RISK ASSESSMENT

Each WHO region conducts qualitative assessments of the risk of sustained poliovirus transmission following an importation. The WHO regions differ with respect to the methods, process and cut-off values used [5], though level of population immunity, surveillance quality, and preparedness for outbreak response are common to all [6]. In 2018, the RCC included the containment risk ranking as a variable in the overall risk assessment matrix and requested the national certification committees in the Region to provide the national perspective on the specific risks and the corrective actions to be taken to mitigate the risks [7]. The risk categorization of Member States in the Region for 2017 is shown in Figure 2.

Figure 2: Risk categorization for spread of polioviruses following importation, WHO European Region, 2014-2017



Data source: WHO/Europe RCC Report
Note : In 2017, classification of 2 Member States, Bulgaria and Serbia are pending

In 2017, three Member States, namely Bosnia and Herzegovina, Romania and Ukraine were categorized by the RCC as being at high risk for sustained transmission following importation, primarily because of low population immunity. These countries were also classified as high risk in 2016. In addition, Bulgaria and Serbia were provisionally classified as high risk pending submission of action plans for a polio outbreak response. Lack of preparedness plans in these countries is an important part of the risk assessment, in addition to the presence of suboptimal population immunity and average surveillance quality.

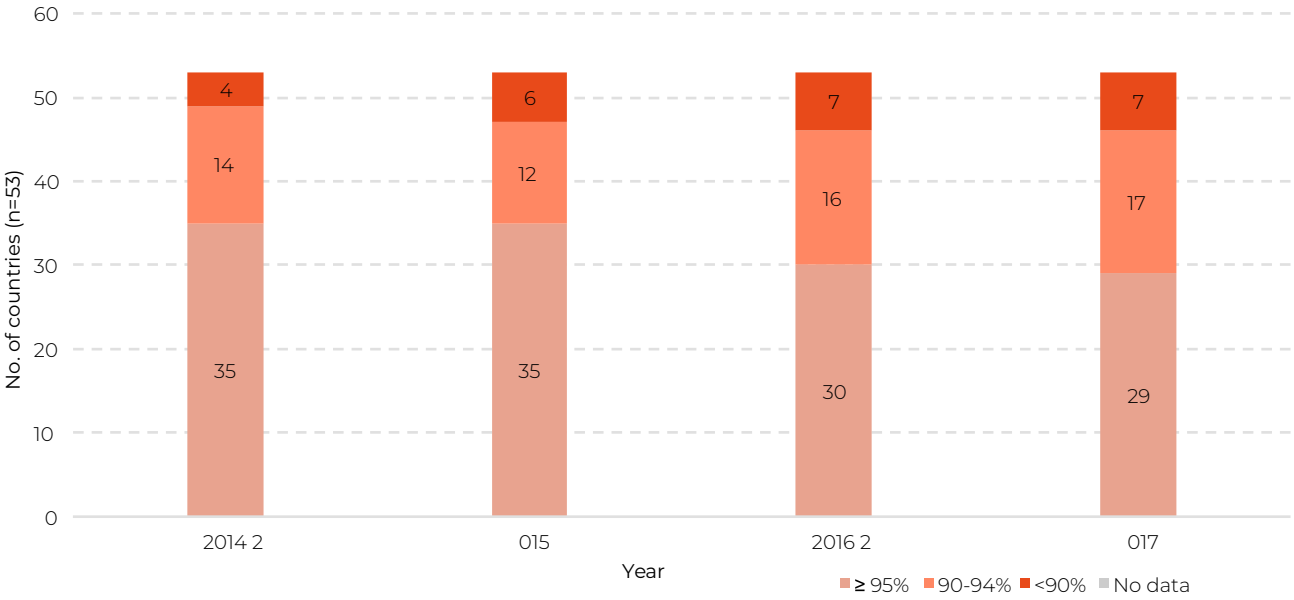
A further review of the individual risks of the Member States in the Region conducted as a part of the polio-risk assessment for the RCC, presented below, provides better perspective of the specific risks and the corrective actions to be taken to mitigate those risks, based on the following characteristics: (1) population immunity gaps; (2) surveillance quality; (3) preparedness for response to importation; and (4) containment of polioviruses.

POPULATION IMMUNITY GAPS

For 2017, 52 Member States reported coverage rates with three doses of polio vaccine (Pol3) through their annual WHO/UNICEF Joint Reporting Form (JRF); Monaco did not report Pol3 coverage in the JRF.

The number of Member States with coverage ≥95% has declined over the past 3-4 years; from 35 in both 2014 and 2015, to 30 in 2016 and 29 in 2017. In 2017, seven Member States had Pol3 coverage < 90% (Figure 3), of which Bosnia and Herzegovina and Ukraine had coverage of 75% and 48%, respectively, raising concerns about increasing immunity gaps in these Member States. Even in Member States with sustained coverage ≥ 95%, concerns remain about the quality of the coverage data and the presence of pockets with immunity gaps, especially among vulnerable and underserved populations. All 53 Member States in the Region have included inactivated polio vaccine (IPV) in their national immunization schedules, of which seven provide a single dose of IPV to supplement immunity provided by the bivalent OPV. Detailed information on individual country schedules is available on the WHO website [8].

Figure 3: Coverage with third dose of polio vaccine, WHO European Region, 2014-2017



Data source: WHO/UNICEF coverage estimates as of 11 July 2018

HIGH-QUALITY SURVEILLANCE

As the world progresses towards certification of polio eradication, maintaining high-quality polio surveillance is crucial not just for certification, but also to mitigate the risks of importation and spread of polioviruses. Assessing poliovirus surveillance quality in the Region is challenging because of the varying surveillance strategies used by the Member States. As per reports available with WHO, in 2017, 44 Member States were conducting acute flaccid paralysis (AFP) surveillance, of which 30 also conducted supplementary surveillance (13 enterovirus surveillance, four environmental surveillance and 13 both enterovirus and environmental); 10 conducted only supplementary surveillance (seven enterovirus surveillance, one environmental surveillance, two enterovirus and environmental). In 2017, only one country (Belgium) in the Region was assessed to have low-quality surveillance and 15[4] to have average quality. This represents an improvement from 2016 when five Member States were assessed to have low-quality surveillance and 17 as having average quality.

PREPAREDNESS AND RESPONSE TO IMPORTATIONS

A polio outbreak simulation exercise (POSE) is a two-day desktop exercise designed to help Member States critically review and update their national plans for responding to the detection of imported wild polioviruses (WPVs) and VDPVs, including use of the International Health Regulations mechanism. The exercise addresses communication, coordination and collaboration at an international and national level and exposes any weaknesses in polio preparedness and response arrangements [9].

In 2017, 18 Member States[5] still did not provide a national plan of action for response to importations. As of July 2018, 20 Member States[6] in the Region had conducted national simulation exercises or participated in the regional events to strengthen polio outbreak response preparedness. These exercises have shown that the level of preparedness needs to be further strengthened, particularly by periodically reviewing and updating the national plans, when available, improving the strategies for vaccine procurement, timely shipment of patient

[4] Andorra, Bulgaria, Croatia, Czech Republic, Greece, Hungary, Italy, Latvia, Monaco, Montenegro, Poland, San Marino, Serbia, Slovenia, and Switzerland.

[5] Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Denmark, Estonia, France, Hungary, Israel, Kyrgyzstan, Latvia, Malta, Monaco, Poland, Serbia, the former Yugoslav Republic of Macedonia, and Turkey.

[6] Armenia, Azerbaijan, Bosnia and Herzegovina, Czech Republic, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Montenegro, Republic of Moldova, Romania, Russian Federation, Serbia, Slovakia, Tajikistan, Turkmenistan, Ukraine, United Kingdom of Great Britain and Northern Ireland and Uzbekistan.

specimens, and risk communication. These simulation exercises have also highlighted programmatic deficiencies that need to be addressed to mitigate the risks of an outbreak following importation and to mount a robust response, including the need for improved quality of coverage, surveillance data, and better information on the high-risk populations along with targeted strategies to reach them as part of the outbreak response.

Box 1: Risk of a poliovirus containment breach and measures to mitigate the risk

In April 2017, a wild poliovirus type 2 (WPV2) leak occurred during downstream IPV production at Bilthoven Biologicals (BBio) in the Netherlands [10]. A containment breach was also reported at GSK Biologicals in Belgium in 2014. While these breaches were rapidly contained, the IHR Emergency Committee on international spread of poliovirus noted that any transmission from such containment breaches could have serious public health consequences and recommended revisions of the WHO and national containment protocols and preparedness plans

The WHO Regional Office jointly with the European Centre for Disease Prevention and Control (ECDC) will support Member States that propose to establish PEFs to conduct POSE with the specific aim of critically reviewing and updating their respective national plans for responding to containment breaches in the PEFs.

CONTAINMENT

As highlighted by the RCC in its 2016 meeting report, as the number of circulating wild polioviruses decreases globally, the main risk for the European Region could come from a containment breach at a vaccine manufacturer or research laboratory. Containment of polioviruses will therefore become an important issue that will require close monitoring in preparation for global certification and to mitigate risks in the post-certification period. Vaccine production facilities as well as laboratories that store polioviruses or materials likely to contain polioviruses, which are to be designated as PEFs, will need to implement measures to mitigate the risks of infection of their workers and further spread of the virus or accidental release of virus into the environment. To date, two containment breaches in vaccine manufacturing facilities in the Region have been reported (see Box 1).

Thirteen Member States in the Region have declared their intent to establish one or more PEFs that will have stock of poliovirus, as laid out in the WHO global action plan to minimize poliovirus facility-associated risk after type-specific eradication of wild polioviruses and sequential cessation of routine OPV use (GAP III). Each Member State with one or more PEFs is required to establish a National Authority for Containment (NAC) to monitor the implementation of containment measures. To date, nine of the 13 Member States have established NACs; the remainder will need to complete the process of formally establishing a NAC.

CONCLUSION

The Region has so far maintained its polio-free status. However, all Member States in the Region remain at risk for importation or re-emergence of poliovirus, with three Member States assessed to be at high risk in 2017 for its subsequent spread. All Member States will need to enhance and/or sustain high vaccination coverage to maintain high population immunity, achieve and/or sustain high-quality surveillance and be prepared to respond promptly in case of an importation or re-emergence of the virus. Member States with PEFs will also need to maintain a high level of surveillance and vigilance to avoid breaches in containment and mitigate the risk of spread, should a breach occur. Member States in the Region will continue to strengthen their outbreak preparedness, including by testing their response plans through POSE.

CHAPITRE 2

GOAL 2: ELIMINATION OF MEASLES AND RUBELLA

Target: By 2015, all Member States have interrupted endemic transmission of measles and rubella for >12 months and by 2018 regional elimination is verified

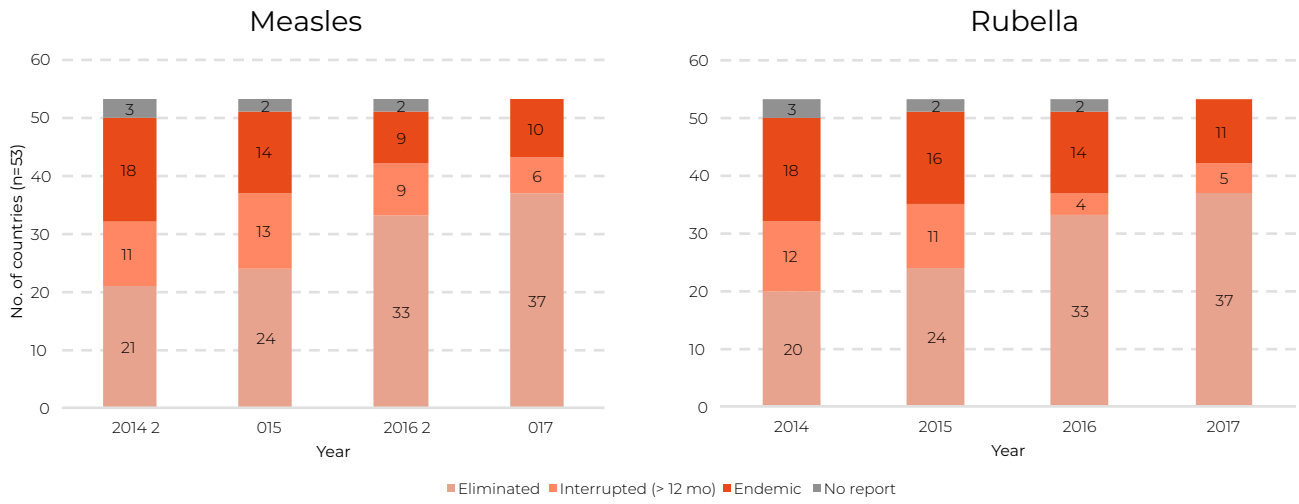
Elimination of measles and rubella is defined as the absence of endemic transmission in a defined geographic area (such as a region or country) for ≥12 months in the presence of a well-performing surveillance system. Verification takes place after 36 months of interrupted transmission [11].

The details of the status of measles and rubella/CRS elimination are available in the RVC 2018 meeting report. This section summarizes the key findings.

STATUS OF ELIMINATION

The target for interruption of endemic measles and rubella transmission for ≥12 months in all Member States in the Region by 2015 was not met and thus, the 2018 target for the verification of elimination of measles and rubella in the Region will not be met. Based on the status of measles control in the endemic countries as well as the persistent immunity gaps and consequent risk of re-establishment of endemic transmission, it will be challenging to verify interruption of transmission for at least 12 months in all Member States in the Region by the end of 2020.

Figure 4: Status of measles and rubella elimination, WHO European Region, 2014 -2017



Data source: WHO/Europe RVC Report

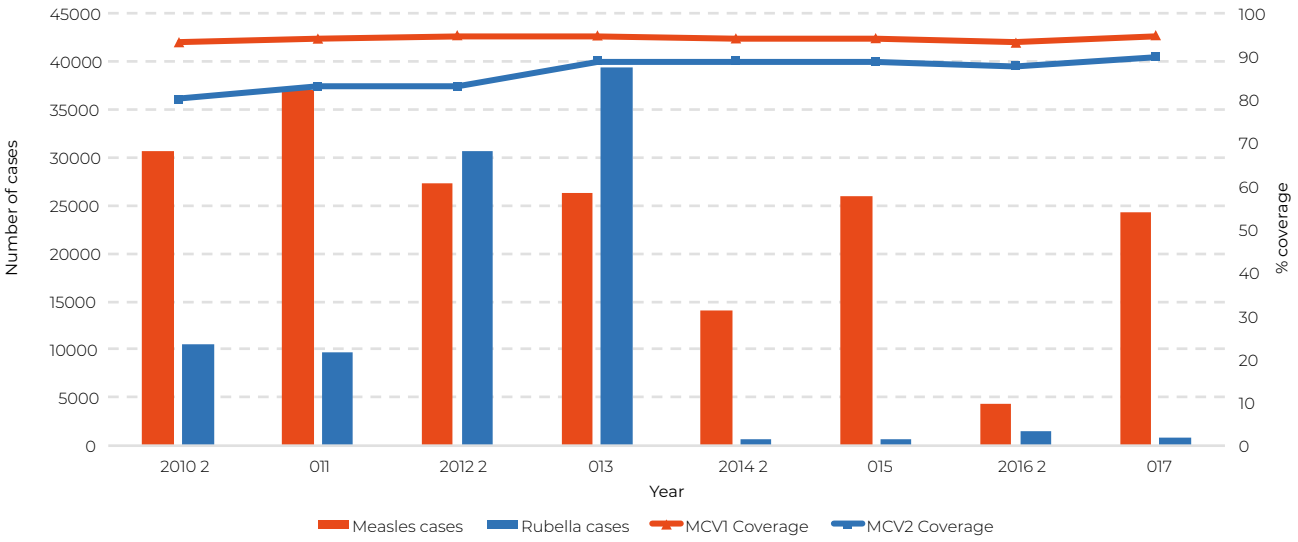
The status of elimination of measles and rubella in the Region, as determined by the RVC is summarized in Figure 4. In late 2014, the RVC modified the verification procedures to verify the measles and rubella elimination status at the national level as opposed to only at the regional level. The number of Member States in the Region that have been verified as having eliminated endemic measles and/or rubella transmission has steadily increased from 21 in 2014 to 37 in 2017 for measles and from 20 to 37 for rubella.

Despite the steady progress with measles and rubella elimination in the Region, the RVC expressed concern about the quality and completeness of the annual status reports from the Member States, making it difficult to assess the interruption of endemic transmission in some Member States.

CASES AND INCIDENCE OF MEASLES AND RUBELLA, 2010-2017

Figure 5 shows the reported number of measles and rubella cases in the Region from 2010 to 2017. The lowest number of reported cases for both measles and rubella was in 2016, though the number of measles cases increased in 2017 to levels higher than in 2014 (the baseline year for EVAP). It may be noted that 496 of the 723 reported rubella cases in 2017 were in Poland and none was laboratory confirmed.

Figure 5: Measles and rubella cases and coverage with measles-and-rubella-containing vaccines (MCV1 and MCV2), WHO European Region, 2010-2017



Data source: WHO/Europe RVC Report

In 2017, a total of 22 447 (range 1 to 5689) cases of measles were reported by 44 Member States in the Region for a regional incidence of 24.06/million population (country incidence range 0 to 294.6/million) and resulting in 36 deaths (data reported as of 6 July 2018) [12]. Twenty-one Member States reported an incidence <1/ million population in 2017, whereas 12 reported an incidence >10/million. Large outbreaks with over 1000 cases were reported from 4 Member States: Romania (incidence 294.6/m), Ukraine (incidence 107.7/m), Greece (incidence 97.6/m) and Italy (incidence 89.7/ m). The total number of rubella cases reported in 2017 was 723 for a regional incidence of 0.78/ million population [11]. Detailed epidemiological information is published monthly in the WHO EpiBrief published by the Regional Office [13].

The following subsections of this report briefly summarize the main challenges to achieving the measles and rubella elimination target for the Region, namely (1) coverage and immunity gaps; and (2) suboptimal surveillance, which could potentially become an impediment to achieving and sustaining interruption of endemic transmission of the diseases and ultimately for the verification of regional elimination.

COVERAGE AND IMMUNITY GAPS

Sustained immunization coverage of ≥95% with two appropriately spaced doses of measles-containing vaccines is needed to achieve and sustain measles elimination. The regional coverage with the first and second doses of measles-containing vaccines (MCV1 and MCV2) in 2017 was 95% and 90%, respectively (Figure 5). In 2017, of the 53 Members States that reported coverage, 23 had MCV1 coverage <95%, of which the coverage was 90-94% in 14 and below 90% in nine countries; two Member States had coverage <70%. Of the 52 Member States for which MCV2 coverage is available, 34 Member States had MCV2 coverage <95%, with 19 of these having coverage <90%. Of note, the MCV2 coverage in Montenegro in 2017 among children 6 years of age was 83% compared to 58% for MCV1 in children < 23 months in the same year. There may not always be a direct relationship between current coverage in infants and the number of measles cases in a given year in individual Member States. For this, one would need to consider population immunity across a much wider age range and consider natural immunity induced by recent disease outbreaks. Nevertheless, low routine immunization coverage in infants indicates risks to achieving and/or sustaining elimination status in the future, unless steps are taken to fill the gaps through supplementary immunization activities.

MEASLES VACCINATION SCHEDULES IN THE EUROPEAN REGION

Based on evidence presented on population mixing rates and the risk of measles transmission [14], the WHO Strategic Advisory Group of Experts on Immunization (SAGE) noted that because of the high contact rates after school entry, immunity gaps in school-age children can be a strong driver of disease transmission. SAGE recommended that countries where the scheduled age for administration of MCV2 is after school entry should consider lowering the age of MCV2, provided this does not have a negative impact on coverage levels. SAGE also recommended that countries should institutionalize school entry checks to determine immunization status and consider approaches to fill immunity gaps [15].

Currently, in the Region, 13 Member States schedule MCV2 after the age of 6 years and many more provide this dose at 6 years, highlighting the need for Member States to review their schedule, together with epidemiological and coverage data to optimize the age of immunization to maximize disease control.

SUBOPTIMAL SURVEILLANCE

In its 2017 meeting report, the RVC noted that the extent and quality of surveillance remains suboptimal in many Member States, including some Member States that have achieved elimination, especially for rubella and CRS.

The implementation of standardized case-based measles and rubella surveillance and the assessment of surveillance quality remains a challenge in the Region because of the divergent surveillance systems in the Member States. Though most Member States in the Region conduct case-based surveillance for measles, as of 2017, nine still did not report monthly case-based data to WHO. Evaluation of the recommended laboratory indicators in 2017 reveal that in 4 Member States, laboratory investigations were done for <80% of suspected measles cases. Twenty-three Member States did not achieve the 80% target for timeliness of investigation [16]. All Member States in the Region have access to WHO-accredited reference laboratories [17]. Similarly, for rubella, of the 24 Member States reporting cases, four performed laboratory investigations for <80% of suspected rubella cases. Fourteen of the 24 Member States did not meet the 80% target for timeliness of investigation.

ECDC collects, analyses and shares with WHO monthly measles and rubella surveillance data from all 28 European Union (EU) Member States and two of the three remaining European Economic Area (EEA) countries (Iceland and Norway). ECDC ensures standardized measles and rubella surveillance reporting across the EU including diagnostic and typing methods and case definitions[7], which differ from the surveillance definitions used by WHO[8]. The remaining countries submit their data to WHO.

[7] Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:262:0001:0057:EN:PDF.

[8] Available at: http://www.euro.who.int/__data/assets/pdf_file/0018/79020/e93035-2013.pdf?ua=1.

At this stage of measles and rubella elimination in the Region, Member States should have the ability to distinguish between endemic and import-related transmission, which supports the verification process. Measles and rubella genotyping data, together with epidemiological information, are important elements that enable Member States to make this distinction. Analysis of the measles case-based data submitted to WHO in 2017 reveals that 94% of the adequate samples collected from suspected measles cases were investigated in a proficient laboratory and that the origin of infection was known in 64% of positive cases. While the reporting of genomic sequence data for measles has improved in recent years in the Region, the reporting of genomic data for rubella remains low.

CONCLUSION

While the Region has made steady progress towards measles and rubella elimination in the last few years, it is not on track to be verified as having eliminated measles by 2020. However, interrupted transmission in all 53 Member States by 2020 is possible if the remaining endemic Member States make a greater, concerted effort to interrupt transmission.

At the same time, it is imperative that the Region not lose momentum nor any gains in pursuit of this goal. Periodic measles outbreaks continue to occur in the Region. Failure to achieve and/or sustain the high level of immunization coverage required to prevent a build-up of immunity gaps suggests that a few Member States that have already interrupted transmission for ≥12 months could be at risk of outbreaks and re-establishment of the disease.

While all Member States in the Region have demonstrated high-level political commitment through the re-endorsement of the elimination goal in 2014, there is complacency in translation of this commitment into action in a few Member States, as evidenced by insufficient allocation of resources, stagnant or declining vaccination coverage, suboptimal surveillance quality, and inadequate preparedness for or response to outbreaks.

CHAPITRE 3

GOAL 3: ELIMINATION OF MEASLES AND RUBELLA

Target: By 2020 all Member States reach hepatitis B control targets and this achievement is validated by ETAGE

Hepatitis B control is among the public health priorities in this Region, which is home to an estimated 13 million individuals chronically infected with the virus, resulting in an estimated 56 000 deaths in 2013 [18]. However, data from systematic reviews of the published literature show that the prevalence of chronic hepatitis B virus infection varies greatly between and within the Member States in the Region, ranging from <0.1% in northern Europe to >10% in countries in central Asia [19,20]. Immunization is a crucial tool in the control of hepatitis B. Since the WHO recommendation for universal hepatitis B vaccination was established in the 1990s, the prevalence of chronic infection in children under 5 years has declined from a global estimated prevalence of 4.7% in the pre-vaccination era to 1.3% in 2015. The estimated prevalence in children under 5 years in the European Region in 2015 was 0.4% [21].

EVAP includes a goal on the control of hepatitis B infection; and Member States adopted indicators and targets related to this immunization goal in the Action plan for the health sector response to viral hepatitis in the European Region [17], which was approved by the Regional Committee for Europe in 2016. The targets for 2020 are as follows:

- 95% coverage with the three or four doses of hepatitis B vaccine recommended for children in countries that implement universal vaccination;
- 90% coverage with timely[9] hepatitis B birth dose vaccination for countries that implement universal newborn vaccination;
- 90% coverage with screening in pregnant women and 95% coverage with post-exposure prophylaxis in infants born to infected mothers for countries that implement screening of pregnant women and post-exposure prophylaxis of newborns; and
- ≤0.5% of hepatitis B surface antigen (HBsAg) prevalence in vaccinated cohorts.

The Regional Office has developed guidelines for validating the achievement of the regional control targets. These guidelines were developed with the guidance of an ETAGE working group, which will also be responsible for reviewing the country reports to assess progress and validate the achievement of targets. However, due to the time required for Member States to conduct sero-surveys, test the sera, analyse and report the data and subsequently for the ETAGE working group to complete the formal validation of achievement of the targets in 53 Member States and at regional level,

[9] A timely birth dose is defined as a dose administered within 24 hours of birth.

this process will likely not be completed by the target year of 2020.

This report summarizes available data from 2014 to 2017 on the indicators related to status of hepatitis B vaccination; prevention of mother-to-child transmission; and prevalence of hepatitis B surface antigen.

STATUS OF HEPATITIS B VACCINATION

Hepatitis B vaccination policies vary among the Member States of the Region. Universal hepatitis B immunization is provided by 49 of 53 (92%) Member States, of which 25 provide universal immunization starting at birth, 21 provide immunization to infants (<12 months of age), but without universal immunization at birth, and three later in childhood or adolescence. Four northern European Member States, where endemicity is very low (Denmark, Finland, Iceland and Sweden), do not provide universal childhood or adolescent vaccination, but rely on selective immunization of newborns of hepatitis B carrier mothers and of "high risk" groups. In Sweden, hepatitis B vaccine is available free of charge for all infants.

Table 1 shows the immunization coverage reported by countries. 45 of the 49 Member States that implement universal childhood immunization reported data on coverage with three doses of hepatitis B vaccine (HepB3) for 2014-2017. In 2015, 2016 and 2017, 22, 23, and 20 Member States, respectively, had achieved the ≥ 95% coverage target set for 2020; in 2017, 37 Member States had achieved the ≥90% milestone set for 2018. Of the remaining Member States that have a policy of universal infant immunization and reported data, all had coverage exceeding 70% except Ukraine. Based on WHO/UNICEF estimates, the number of countries that reached the 2020 coverage target appears to have declined in 2017 compared to previous years.

Table 1: Coverage with third dose of hepatitis B and hepatitis B birth dose, WHO European Region, 2014 -2017

INDICATOR	N*	COVERAGE	2014	2015	2015	2017
No. of Member States with reported HepB3 coverage	45	≥ 95%	26	22	23	20
		90-94%	12	15	14	17
		< 90%	7	8	8	8
No. of Member States with reported HepB_BD coverage	22/23#	≥ 90%	21	21	21	21
		85-90%	0	0	0	0
		< 85%	2	1	1	2

HepB3 = third dose of hepatitis B vaccine, HepB_BD = birth dose of hepatitis B vaccine
*N= no. of Member States reporting coverage data to WHO

In the period 2014–2017, up to 23 Member States have reported coverage for the hepatitis birth dose (HepB_BD). In 2017, 21 (of 23 Member States with coverage estimates) had coverage reaching the target of ≥90%. Availability of data on the proportion of infants who received a timely birth dose is suboptimal and will require closer monitoring in future.

PREVENTION OF MOTHER-TO-CHILD TRANSMISSION OF HEPATITIS B

Of the 25 Member States in the Region that provide universal newborn vaccination, 14 also screen pregnant women and provide post-exposure prophylaxis to infants born to mothers who are positive for HBsAg. The remaining 28 Member States do not provide universal newborn vaccination, but screen pregnant women and provide post-exposure prophylaxis to infants born to HBsAg positive women. Currently data on the coverage of screening of pregnant women and prophylaxis to exposed infants are not routinely reported to WHO. Member States will be requested to present data from routine reports or special studies as part of the validation process by the ETAGE working group. Data from recent studies reported in the published literature indicate that high coverage can be achieved, though close monitoring is also required to ensure completion of the vaccination schedule and follow-up testing [22-25].

Box 2: Tajikistan – country experience

Tajikistan was considered to be a highly endemic area for hepatitis B virus (HBV) in the pre-vaccine era. The country introduced universal hepatitis B vaccination in 2002 and has reported ≥80% coverage with three doses of hepatitis B vaccine (HepB3) since 2004. To measure the impact of vaccination introduction, residual serum specimens from a 2010 national serosurveyusingastratifiedmulti-stageclustersampling of all residents of the country were tested for the prevalence of HBsAg. A total of 2188 samples were tested. Prevalence of HBsAg among cohorts with HepB3 coverage ≥ 80% was 0.4% (0.1-1.3%) whereas prevalence among cohorts born before the implementation of universal vaccination and unvaccinated adults was 3.5% and 6.8%, respectively.

Through the systematic collection and analysis of serological data the country was able to document the substantial impact of hepatitis B vaccination [28].

HBSAG PREVALENCE

The prevalence of HBsAg in cohorts born after the implementation of universal immunization or of universal screening and post-exposure prophylaxis will be a critical measure for validating the achievement of the hepatitis B control goal. Member States will be requested to collect and report seroprevalence data as part of the validation process. Systematic reviews of available data from the Region indicate that nationally representative good-quality seroprevalence data are limited. A systematic review conducted by ECDC was only able to identify studies from 13 countries with low probability of bias [26]. Another review of data from non-EU countries in the Region could only identify 21 studies from seven countries, of which only four had national or multi-site data from the general population [27].

Going forward, data from well-designed serosurveys will be requested to document the impact of vaccination and achievement of the hepatitis B control goal and targets. WHO has published guidelines for designing and conducting serosurveys to measure the impact of hepatitis B vaccination [26, 27].

CONCLUSION

While a goal for the control of hepatitis B infection through vaccination was established in the EVAP, the indicators and targets for monitoring this goal were only recently established. Validation of achievement of the targets will be conducted by an ETAGE working group. Member States in the Region use different strategies for hepatitis B control, as appropriate to their situation. Vaccination coverage in Member States implementing universal immunization of infants is generally high, with a few exceptions. Data on coverage with universal screening of pregnant women and provision of post-exposure prophylaxis to infants is not available from all Member States implementing this strategy, but will be requested as part of the validation process as will data on seroprevalence of HBsAg in cohorts born after the implementation of universal vaccination and/or universal screening of pregnant women and post-exposure prophylaxis to infants born to HBsAg positive women. Considering the already low regional prevalence of HBsAg carriage and the high coverage with vaccination and/or screening, this goal could be well within reach in the Region.

CHAPITRE 4

GOAL 4: MEET REGIONAL VACCINATION COVERAGE TARGETS AT ALL ADMINISTRATIVE LEVELS

Target: By 2020, 48/53 (90%) of Member States with ≥95% DTP3 at national level

High and equitable coverage with vaccination is critical for achieving and sustaining vaccine-preventable disease eradication, elimination and control goals and embodies the principles of equity and empowerment underlying the Sustainable Development Goals (SDGs). While high and equitable coverage with all vaccines in the national programme and across the life-course is important, coverage with three doses of DTP-containing vaccines (DTP3) is used here as a proxy measure for immunization coverage in general.

AVAILABILITY AND LIMITATIONS OF COVERAGE DATA

National immunization coverage data for 2017 were reported by 53 Member States in the Region. These included coverage from their administrative data systems, their official estimate of national coverage[10], or both.

The WHO/UNICEF estimates of national immunization coverage (WUENIC) are based on data reported by Member States and adjusted for potential biases, taking expert opinion into consideration [29]. For the years when Member States do not report data, estimates are derived by extrapolating from available reported data.

Since 2011, the WUENIC for each country is accompanied by a "grade of confidence" (GoC), which reflects the degree of empirical support for the WUENIC and is not a judgment of the quality of data reported by national authorities [29]. Each estimate is given a score of 1 to 3, with 3 representing the highest degree of confidence. The 2016 WUENIC estimates for 13 Member States received a GoC score of 1,[11] 39 received a score of 2, and one country (Kazakhstan) received a score of 3. The Member States that received a score of 1 either did not report coverage for 2016 or their reported coverage was challenged and the estimate recalculated using an independent denominator.[12] Equivalent data for 2017 were not available at the time of preparing this report. Supporting data from a coverage survey were only available for the 2016 WUENIC from Kazakhstan. Survey data are available for birth cohorts of 2012 or later

[10] The official estimate may represent an estimate of coverage from sources other than the administrative data systems (e.g. coverage surveys or estimates derived from coverage at school entry) or when adjustments are made to administrative coverage based on other sources of data or to accommodate doses not captured in the administrative systems, e.g. doses delivered outside the government system.

[11] Albania, Azerbaijan, Germany, Hungary, Italy, Latvia, Monaco, Malta, Poland, Portugal, Serbia, Sweden and Switzerland.

[12] TWorld Population Prospects: 2015 revision from the UN Population Division (used for the GoC assessment of 2016 WUENIC).

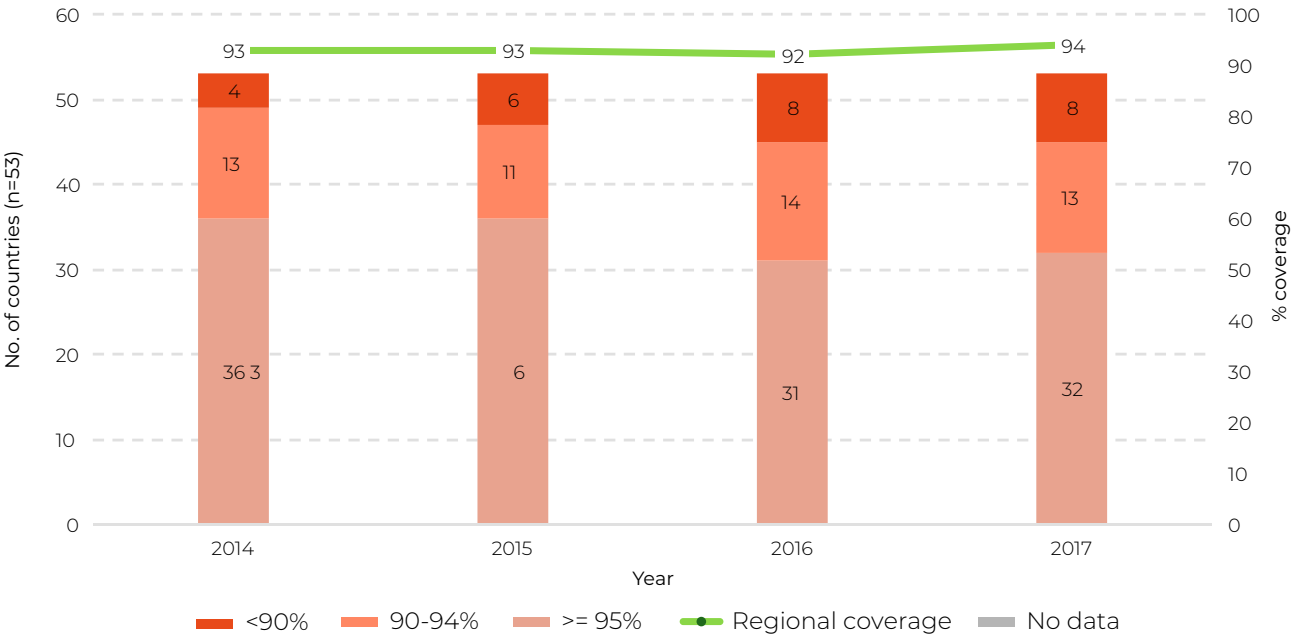
[13] Belgium, Cyprus, Kazakhstan, Kyrgyzstan, Montenegro, Serbia and Turkmenistan.

from seven Member States in the Region.[13] WHO is aware of ongoing surveys in three additional Member States.[14] In addition to providing supporting data for the national immunization coverage, surveys could provide very useful information on the social and economic determinants of immunization, drivers of inequity and reasons for un- and under-vaccination that could guide programme planning.

All Member States in the Region are required to submit data through the JRF on the number of districts (or equivalent administrative units, but hereafter referred to as districts) with DTP3 coverage within specified ranges. Seventeen Member States which submitted the JRF did not provide data for districts with coverage within a specific range (Andorrva, Malta, Monaco and San Marino are excluded because there is only one administrative level in the country); 32 Member States provided the number of districts with coverage within a specific range.

PROGRESS TOWARDS THE TARGET

Figure 6: Regional DTP3 coverage, WHO European Region,2014 -2017



Data source: WHO/UNICEF coverage estimates as of 11 July 2018

For 2017, 32 Member States show DTP3 coverage ≥95% (Figure 6) at national level; this represents a decline from 2014 when 36 Member States had achieved this coverage. This change is also reflected in an increase in the number of Member States where coverage is <90%, including two that had coverage <80%. Similar trends are also noted for other vaccine doses, namely the third dose of polio vaccine and the first dose of measles-containing vaccine.

Nine Member States had drop-out rates ≥5% (range 6% to 23%) between DTP1 and DTP3; three of which could achieve DTP3 coverage >90% by taking measures to reduce drop-out.[15]

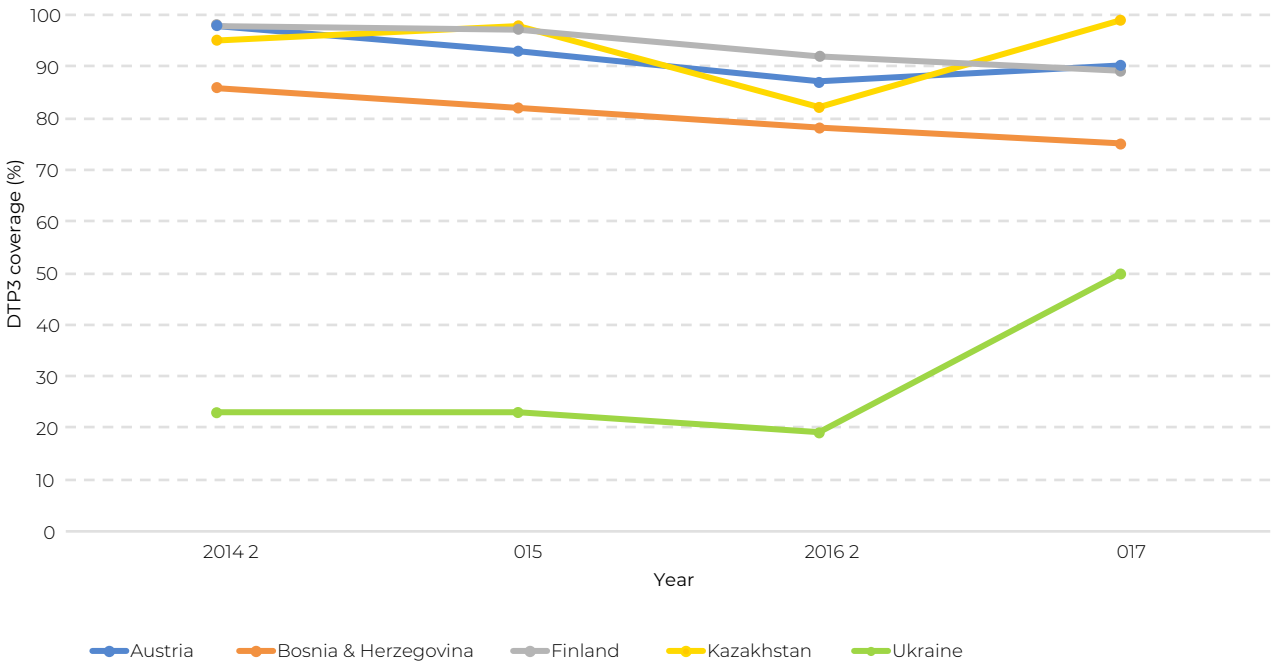
VACCINATION TRENDS

Five Member States showed considerable decline in DTP3 coverage in one or more years from 2014 to 2016 (Figure 7) In 2017, the regional DTP3 coverage was 94%, which is 2% more than in 2016 and 1% higher than the 2014 base level. Of the Member States which showed decline in previous years, Kazakhstan and Ukraine reported a substantial increase in coverage in 2017 compared to 2016 (Figure 7). In addition, Bulgaria, Denmark, Israel, Latvia and Norway registered an increase in coverage of around 4-6% in 2017 from the 2014 base level.

[14] Armenia, Georgia and Sweden.

[15] Croatia, Georgia and the former Yugoslav Republic of Macedonia.

Figure 7: Member States showing decline in coverage between 2014 and 2016, and the status in 2017, WHO European Region



Source: WHO/UNICEF coverage estimates as of 11-July-2018

GEOGRAPHIC AND SOCIOECONOMIC INEQUITIES IN COVERAGE

Objective 3 of the EVAP calls for the benefits of vaccination to be equitably extended to all people through tailored, innovative strategies. The target for this objective is that ≥90% of districts (or equivalent administrative units) achieve ≥90% DTP3 coverage. Not all Member States in the Region report coverage at the district level. The number of Member States that report such coverage and the number that report ≥90% of districts achieving ≥90% DTP3 coverage is shown in Table 2. In 2017, of the 32 Member States that reported district coverage, 53 districts in 10 countries had coverage <80%, including one district with coverage <50%.

Table 2: District level DTP3 coverage, WHO European Region, 2014-2017

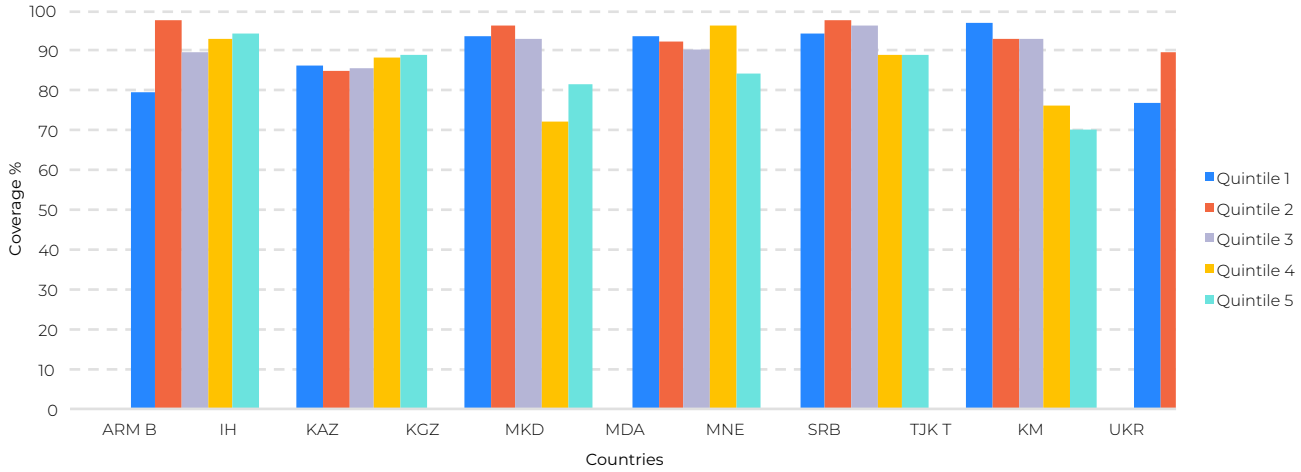
YEAR	2014	2015	2016	2017
No. of Member States reporting district level coverage	36	37	36	32
No. of Member States with ≥90% districts with DTP3 coverage ≥90%	25	27	25	21

Data on health and vaccination inequities between wealth quintiles are collected through standardized surveys such as demographic and health surveys (DHS) supported by the United States Agency for International Development (USAID)[16] and the multiple indicator cluster surveys (MICS) supported by United Nations Children's Fund (UNICEF).[17] These surveys aregenerally conducted in low- and middle-income countries. The difference in coverage between the richest and poorest quintile is often used as an indicator of socio-economic inequity. The DTP3 coverage by wealth quintile from 12 Member States in the Region that have data from surveys conducted in 2010 or later are shown in Figure 8.

[16] The DHS Progam: Demographic and Health Surveys. Available at: https://dhsprogram.com/Who-We-Are/About-Us.cfm.

[17] UNICEF multiple indicator cluster surveys (MICS). Available at: http://mics.unicef.org/.

Figure 8: DTP3 coverage by wealth quintile in Member States with DHS/MICS surveys conducted in or after 2010, WHO European Region



ARM= Armenia; BIH= Bosnia & Herzegovinia ; KAZ= Kazakhstan; KGZ= Kyrgyzstan; MKD= The former Yugoslav Republic of Macedonia; MDA= Republic of Moldova; MNE= Montenegro; SRB= Serbia; TJK= Tajikistan; TKM= Turkmenistan; UKR= Ukraine

Quintile 1= Poorest quintile and Q5= Richest quintile.

Data source: WHO/UNICEF coverage estimates as of 11-July-2018 and World Bank Income level as of June-2017

The available survey data showed no consistent pattern of coverage by wealth quintile across all countries. Where patterns in individual countries were apparent (Republic of Moldova and Serbia), they show higher coverage in the lower wealth quintiles compared to the higher wealth quintiles. The reasons for lower coverage in socially advantaged groups in a few countries merits further investigation. The patterns also indicate that the socio-economic gradients that determine access to health care in general may not apply to immunization service access and utilization in some Member States in the Region, especially those in Eastern Europe and Central Asia from where most of the survey data emanate. These trends may not reflect the situation in other Member States in the Region.

Not all Member States in the Region conduct the MICS that generate the data described in Figure 8. However, it may be possible to analyse disaggregated data from immunization information systems to generate information on determinants of inequalities in immunization coverage. Public Health Wales regularly analyses and publishes coverage by quintile of deprivation of the Lower Super Output Area in which respondents reside [30]. These data, which show a clear socio-economic gradient with lower coverage in the more deprived areas, help in targeting such areas to enhance coverage and reduce inequity.

UNDERSTANDING THE ROOT CAUSES OF LOW COVERAGE

The root causes for persistent low or declining coverage at the national level in some Member States and for inequities in coverage are contextual and vary between and within Member States and over time. A comprehensive understanding of the root causes requires an in-depth assessment of health system shortfalls as well as community demand for vaccination. The available information consulted for this report does not allow for a detailed country-by-country analysis, but it does provide some insights into two of the causes.

a. Vaccine demand

The decline in vaccination coverage seen in several countries and consequently in the Region as a whole has been attributed, in part, to vaccine hesitancy or concerns related to a specific vaccine. For example, Member States in the southeastern parts of the Region have seen declines especially for the measles-mumps-rubella vaccine (MMR), while Denmark and Ireland experienced a sharp decline in coverage for the HPV vaccine. The latter was the result of increased reports of diffuse unexplained symptoms reported by vaccinated girls, their relatives and health professionals that caught media attention and raised concerns about the safety of the vaccines. In January 2016, the Global Advisory Committee for Vaccine Safety concluded based on a thorough review of evidence that there was no evidence to support any serious safety concerns related to the use of HPV vaccines.

Even in countries with sustained high vaccination coverage at national level, pockets of low coverage exist, sometimes resulting in outbreaks of vaccine-preventable diseases. The reasons behind low uptake in certain communities are often not sufficiently explored. The evaluation report of the Tailoring Immunization Program (TIP) approach provides examples from Bulgaria, Lithuania, Sweden and the United Kingdom of Great Britain and Northern Ireland that illustrate the many reasons that lead to low uptake of vaccines, including those that relate to convenience of vaccination services, legislation, education of and support to family doctors and community and peer support.

Achieving and sustaining the high and more equitable

vaccination coverage needed for disease eradication, elimination and control depend on communities maintaining high demand for vaccination and trust even in the face of reports or rumours about adverse events.

The complex and wide-ranging issues that lead to vaccine hesitancy and decreasing demand require a multi-dimensional response, based on a good understanding of both the community and health provider perspectives. The TIP guide provides a framework to identify and prioritize the underserved populations, diagnose the demand and supply-side barriers to immunization and to design, implement and evaluate a tailored response [31]. Experience with implementing this approach has shown that the findings of formative research may challenge preconceived notions about the reasons for low vaccination uptake (see Box 3), make services more responsive to community needs and enhance the engagement of community representatives, making them strong advocates for immunization with the community [32]. The reasons for low uptake may also vary between different communities in the same country, as was the case in Sweden [33].

The WHO Regional Office for Europe works with Member States to sustain demand and confidence in vaccination through the provision of guidance documents, support for the conduct of formative research, training on responding to vocal vaccine deniers, preparing for and responding to crisis in confidence, and identifying and tailoring immunization programme interventions to address identified challenges. The guidance documents are available on the WHO website [34-36].

Box 3: Improving immunization coverage among the Charedi Jewish community in North London

In an attempt to better understand reasons for suboptimal coverage of children's immunizations within an ultra-orthodox Jewish community in North London, Public Health England (PHE) in partnership with the community, immunization service commissioners and health providers conducted a WHO Tailoring Immunization Programmes (TIP) project during 2014–2016. The project aimed to provide evidence-informed recommendations to immunization commissioners and providers to enable services to be better tailored to the needs of the community. Engagement with the community and the qualitative research showed that, contrary to the preconceived assumption, there was no religious or other resistance to vaccination in the community. Most issues leading to low vaccination uptake were related to the large family sizes in this community. Competing pressures on these families made it challenging to prioritize immunization, especially when it was difficult to secure an appointment and waiting times were long in facilities that were not child-friendly.

The findings from this assessment led to a series of recommendations to ensure that the service providers are able to meet the needs of the community.

However, it is well recognized that implementing the recommendations will be a long-term process to ensure sustainable health behaviour change through understanding the needs of the intended beneficiaries.

b. supply shortages and stock out

In 2017, 20 Member States reported 49 events of vaccine stockouts either at the national or subnational level. Thirty-two of the 49 events resulted in stockouts at the subnational level. In all except two events where the duration of the stockout was reported, it was ≥ 1 month (range 1 to >12 months) and vaccination was interrupted in 27 such events. In 12 Member States, the stockout affected more than one vaccine (range two to five vaccines), including combination vaccines[18]. The vaccines most commonly affected were DTP-containing combinations and hepatitis B vaccine (stockouts were reported in 10 Member States for each of these vaccines). Of the 5 Member States[19] where the stockout of DTP-containing combination vaccines led to interruption in delivery of the vaccines, two Member States (Bosnia and Herzegovina, and Romania) also experienced a drop in DTP3 coverage ≥5% in 2017 compared to 2014 levels. In Romania, which experienced a vaccine stockout lasting five to six months as a result of procurement delays, DTP3 coverage in 2017 was 82% compared to 89% in 2015 and 2016 and 94% in 2014. In contrast, Kazakhstan and Ukraine, which experienced stockouts of DTP-containing vaccines and interruption of services in 2016 but not in 2017, DTP3 coverage increased from 82% and 19%, respectively in 2016 to 99% and 50%, respectively, in 2017.

The reasons reported for the 49 stockout events were vaccine supply shortage (in 26 cases), procurement delays (in 14 cases) and other or unknown reasons (in nine cases). In 2016, the Bacille Calmette-Guerin vaccine against tuberculosis (BCG) was among the most commonly affected vaccines. Recent analyses performed by WHO identified some root causes for those supply shortages. Several BCG manufacturers with product licensed in Europe experienced production issues and left the market[20]. While the global supply remained higher than demand, local registration constraints –

[18] Shortages were reported for BCG, PCV, Hepatitis B containing vaccines, Hib containing vaccines, DTP combinations, OPV, Tetanus Toxoid, measles containing vaccines, IPV, HPV, and rotavirus.

[19] Austria, Estonia, Iceland, Kazakhstan, Romania and Ukraine.

countries with only one product registered – resulted in shortages and need for emergency issuance of import licenses to procure products not registered in the country.

For DTP-containing vaccines, recent restructuring of the manufacturing base resulting from acquisitions[21] and the corporate decisions[22] to concentrate paediatric vaccine production on selected acellular-pertussis combinations led to a reduction in capacity for hepatitis B vaccine that affected specific countries irrespective of the unconstrained global supply situation. As was the case with BCG, reliance on a very limited number of registered products resulted in shortages when some of those products encountered production issues or reduction in available supply.

CONCLUSION

Achieving and maintaining high and equitable coverage underlies the achievement and maintenance of all the vaccine-preventable disease eradication, elimination and control goals. There has been a decline in the number of Member States with DTP3 coverage ≥ 95% since 2015. Consequently, there is concern about achieving the 2020 target. Data to monitor equity is only being reported to WHO by a fraction of Member States (26/53 in 2017) and the achievement of the target of ≥90% coverage in ≥90% districts could only be documented in 14 Member States in 2017. Analysis of disaggregated data, and periodic surveys and special studies will be required to monitor inequity and take measures to address them. The Regional Office is in the process of developing a guidance document to assist Member States with monitoring and addressing inequity. Available data show that vaccine hesitancy has led to declining coverage of some vaccines at the national level in a few Member States and contributes to inequitable coverage. Further in-depth research and analyses of data at the country level would provide further insights into the root causes. Application of the TIP approach facilitates a better understanding of the reasons for low uptake and the design of tailored approaches to address barriers to vaccination. Evidence also indicates that vaccine stockouts contribute to a low or declining coverage in some Member States. The reasons for stockouts vary between countries but all require remedial actions.

CHAPITRE 5

GOAL 5: MAKE EVIDENCE-BASED DECISIONS ON INTRODUCTION OF NEW VACCINES

Target: By 2020 at least 90% of Member States with a NITAG have made an informed decision on introduction of a new vaccine following review of the relevant evidence by the NITAG

Evidence-informed decision-making through the advice of a competent and credible national immunization technical advisory group (NITAG) is a key factor for the introduction of new vaccines and for their sustained and optimal use. WHO recommends that NITAGs take the following issues into consideration when making recommendations on the introduction of a vaccine: (1) the disease, including its burden, public health or political priority, and the availability of other prevention and control measures; (2) the vaccine, including its efficacy and safety, economic and financial issues and supply availability; and (3) the strength of the immunization programme and health system to accommodate the vaccine.

The Region has made substantial progress in establishing NITAGs and in strengthening their capacities. As of December 2017, 47 of the 53 Member States in the Region had established NITAGs including 17 of the 21 middle-income countries (MICs). At the time of writing this report, the Russian Federation is in the process of establishing a NITAG. In 2017, based on available data, 35 of the 47 NITAGs met all six process indicators for functionality of their NITAGs.

Member States report annually on whether their NITAGs made a recommendation for or against introduction of three vaccines, namely pneumococcal conjugate vaccine (PCV), rotavirus vaccine (RV) or HPV, as per the indicator for this goal. NITAGs in 42 of the 53 Member States in the Region made evidence-informed recommendations related to either PCV, RV and/or HPV (by close of 2017) (Table 3). In some Member States that do not have a NITAG established or in place at the time of a decision, the decisions were made through equivalent technical expert groups.

[20] Sanofi interrupted production in 2012, Staten Serum Institute interrupted production in 2015, was sold to AJ Biologics in 2017 and has not yet re-started production.

[21] GSK acquired Novartis Vaccines & Diagnostics in 2015, the latter being a major source of supply for DTP-containing vaccines.

[22] Both GSK and Sanofi-Pasteur have recently announced their rationalisation of the product portfolio.

Table 3: Number of Member States whose NITAGs (or equivalent bodies) made evidence-informed recommendations related to PCV, RV or HPV vaccines (by close of 2017)

	PCV	RV	HPV
NITAG made a recommendation	41	33	42
NITAG did not make a recommendation	4	12	5
Not Applicable (No NITAG)	6	6	6
Not known	2	1	0
Decision made before NITAG was established	4	3	2
No. of Member States that introduced the vaccine	41	17	35

Not all NITAG recommendations in favour of a vaccine have led to its introduction. As of the close of 2017, RV was used only in 19 Member States and HPV in 35 Member States. Where reasons are known, the decision of the immunization programme not to introduce the vaccine despite a positive recommendation was related to affordability of the vaccines and financial sustainability challenges.

The Regional Office has supported MICs in establishing and strengthening NITAGs. The Regional Office has conducted meetings, mainly targeting MICs with recently established NITAGs, to review their status, discuss challenges and share experiences; facilitated study tours to observe the functioning of well-established NITAGs; and supported participation of the NITAG chairs and secretaries at the meetings of ETAGE and SAGE. The Regional Office conducted evaluations of the NITAGs in Kazakhstan and Kyrgyzstan using a standardized evaluation tool and arranged a visit of representatives of the Joint Committee on Vaccines and Immunization of the United Kingdom to Georgia to evaluate the Georgian NITAG and provide recommendations for its improvement. The evaluations revealed challenges that many of the new NITAGs continue to face, including the process for development of NITAG recommendations, the need to improve the quality of NITAG recommendations and reports, and lack of formalization of communication with the national government authorities.

As exemplified by the experience in Kazakhstan (see Box 4), the development/revision of NITAG charters and standard operating procedures, continuing capacity building of NITAG members and the secretariats as well as improved collaboration among NITAGs through the NITAG Resource Centre and Global NITAG Network will enable full functionality of the newly established NITAGs and enhance their capacity to provide informed and independent advice to the national immunization programmes.

Box 4: Evaluation of the Kazakhstan NITAG

The Kazakhstan NITAG was established in February 2012. A formal evaluation of the NITAG was conducted in 2017 using the standardized WHO/SIVAC tool [37]. The evaluation concluded that Kazakhstan NITAG meets the WHO process indicators for a well-functioning NITAG. It has a legislative basis and written Terms of Reference, meets annually, and the members are informed about a meeting agenda in advance. Its members represent at least five disciplines and declare potential conflicts of interests prior to each meeting.

The evaluation recommended revision of the NITAG's composition (reassignment of MoH representatives as ex-officio members and inclusion of representatives of medical associations), formalization of communication with the MoH, development of annual work plans, revision of the NITAG Charter and development of Standard Operating Procedures for the development of recommendations, and improved quality of NITAG reports and recommendations.

The evaluation provided very useful insights about the limitations of the NITAG and the measures that could be taken to enhance its capacity and functionality. It also helped WHO and partner agencies in planning support for NITAG strengthening.

GENERATING EVIDENCE FOR DECISION-MAKING

High-quality surveillance is required to generate local evidence on the burden of disease and to document the impact of vaccines once they are introduced. Fifty-one Member States in the Region conduct

surveillance for invasive vaccine-preventable bacterial diseases (IB-VPD) and 38 conduct surveillance for rotavirus (RV). Of these, four Member States participate in the WHO coordinated IB-VPD surveillance network and seven in the RV surveillance network and provide case-based data to WHO. These data are regularly summarized and published in the WHO surveillance bulletins [38]. Beginning in January 2017, the RV surveillance network has expanded in five Member States to now test specimens for over 20 enteric pathogens, to inform decisions on newer vaccines in the pipeline.

Five of the seven MICs in the RV network have introduced the vaccine; two of them have used their sentinel sites to monitor the impact of vaccination and published the results; while two others are in the process of estimating vaccine effectiveness using their surveillance data. These data will be useful for decision-making on sustaining vaccination.

CONCLUSION

There has been substantial progress in establishing NITAGs in the Region and in enhancing their capacities to provide credible, well-informed recommendations to the national governments based on a thorough review of the available evidence. However, further support from WHO or other partner agencies would be required to further enhance these capacities. WHO supports a network of sentinel sites that conduct surveillance for IB-VPD and RV. While these sites have generated data to support decisions on vaccine introduction, surveillance capacity will need to be enhanced to document the impact of vaccines. These data will become important for sustained financing in the face of other competing priorities.

CHAPITRE 6

GOAL 6: ACHIEVE FINANCIAL SUSTAINABILITY

Target: By 2020, at least 51/53 (96%) of MS are financially self-sufficient for procuring routine vaccines

The availability of adequate financial resources is critical to achieve and sustain the EVAP goals and vision.

By 2016, 47 Member States had achieved financial self-sufficiency in procuring vaccines in their national immunization schedules using domestic funding. Armenia, Azerbaijan and Georgia followed in 2017, as they transitioned from donor support. Uzbekistan will be the next country to achieve financial self-sufficiency by 2020. Only Kyrgyzstan and Tajikistan will continue to receive donor support for procurement of vaccines beyond 2020.

Being self-sufficient to procure the routine vaccines does not necessarily imply that all national programmes receive sufficient financial resources to achieve the EVAP vision and its ambitious targets and sustain these achievements thereafter. The evidence presented in Chapter 7 indicates that several MICs in the Region that do not benefit from donor support are lagging behind and are at risk of not achieving the EVAP targets. There are also concerns about the sustainability of immunization programmes in Member States that have recently lost or will soon lose donor support.

AVAILABILITY AND LIMITATIONS OF DATA

Financial sustainability includes secured long-term domestic funding to meet programme objectives and efficient use of available resources. Member States report annual expenditures on vaccines in the JRF. To help understand long-term financial sustainability and assess efficiency in the use of available resources, these data were triangulated with data from other sources, including data from national procurement websites, financial reports of pharmaceutical companies and data obtained through direct communications with the Member States to generate best estimates on vaccine expenditures on vaccines included in the national immunization schedules for the years 2014 to 2016. The prices were converted to US dollars, applying the mid-year exchange rate for each year.

Since vaccine prices and delivery costs differ from one country to another, especially between those in different income brackets, it is difficult to make relevant comparisons across countries. As shown in Table 4, the average vaccine expenditure per live birth varies considerably between countries in the three income brackets, with the lowest costs in the low-middle-income countries that have benefited from donor support since 2017. Vaccine expenditures are expected to fluctuate between years as vaccine prices change over time and new vaccines are added to the programme.

EXPENDITURES ON VACCINES

The average vaccine expenditures per live birth in the Member States in the Region, stratified by income level and access to donor support, are presented in Table 4. As expected, the highest expenditures are in HICs, and the lowest in MICs that benefit from vaccines at subsidized prices through Gavi support.

Data on vaccine expenditures were available from 12 of the 32 HICs for 2014 and 2015, and from 11 HICs for 2016. Data were available from eight, 10 and 13 of 14 MICs without access to donor support for 2014, 2015 and 2016, respectively. Data were available from all seven MICs with donor support for each of the three years.

Table 4: Average vaccine expenditures per live birth, 2014-2016

INCOME CATEGORY	AVERAGE VACCINE EXPENDITURES PER LIVE BIRTH (CURRENT US $)		
	2014	2015	2016
HIC	348.51	299.36	386.03
MIC (no donor support)	132.08	101.26	137.45
MIC (donor support)	38.62	37.62	38.53

Available data from the WHO Global Health Expenditure Database for 2014 and 2015 [39] were also analysed to assess government expenditures on health as a proportion of the national per capita GDP and the total national government expenditures. The results stratified by country income categories are shown in Table 5.

Table 5: Average domestic government health expenditures as a percentage of per capita GDP and of total government expenditures, 2014 and 2015

INCOME CATEGORY	AVERAGE DOMESTIC GOVT. HEALTH EXPENDITURE AS % OF PER CAPITA GDP		AVERAGE DOMESTIC GOVT. HEALTH EXPENDITURES AS % OF TOTAL GOVT. EXPENDITURES	
	2014	2015	2014	2015
HIC	6	6	14	14
MIC (no donor support)	4	4	11	10
MIC (donor support)	3	3	8	8

On average the lower-income countries spend a lower proportion of their GDP and their total government expenditures on their national health programmes.

Vaccine expenditures as proportion of current health expenditures through government schemes and compulsory contributions to health care (hereafter referred to as current health expenditures)[23] were calculated for the year 2015 for 29 Member States in the Region for whom data were available. The results are presented in Table 6.

[23] Current health expenditures through government schemes and compulsory contributions to health care is an indicator in the Global Health Expenditure Database.

Table 6: Vaccine expenditures as a proportion of current health expenditures through government schemes and compulsory contributions to health care, 2015

INCOME CATEGORY	HIC (N=12)	MIC WITHOUT DONOR SUPPORT (N=10)	MIC WITH DONOR SUPPORT (N=7)
Average	0.22%	0.72%	1.10%
Range	0.01 to 0.71%	0.12 to 2.48%	0.47 to 2.17%

Though vaccine expenditures form a larger proportion of current health expenditures in MICs compared to HICs, the range is quite wide with vaccine expenditures forming less than 0.25% of the current health expenditures in five MICs without donor support, compared to 2.48% in Turkey in the same income category but where immunization is accorded high priority. Of the five Member States that have not introduced either PCV, RV or HPV (see Table 5), in three[24] vaccine expenditures constitute <0.25% of current health expenditures. Data to calculate this figure were not available from the remaining two.

CONCLUSION

The Member States of the Region are on track to achieve financial self-sufficiency for procuring routine vaccines by 2020. However, concerns remain about the current funding mechanisms in some of the MICs to adequately finance their immunization programmes to achieve the EVAP vision and goals, including but not limited to the introduction of new vaccines. On average these countries spend a lower proportion of their GDP and total government expenditures on health as compared to high-income countries. In addition, some MICs that are lagging behind (see Chapter 7) spend a relatively low proportion of their current health expenditures on procuring vaccines, indicating that there may be fiscal space to increase their spending on immunization and accelerate progress towards achieving the EVAP goals. In addition, these countries could access vaccines at optimum prices by improving their procurement systems.

CHAPITRE 7

MIDDLE-INCOME COUNTRIES FALLING BEHIND: A LANDSCAPE ANALYSIS

BACKGROUND

There are increasing concerns that MICs that do not benefit from external support may face difficulties in achieving and sustaining the ambitious EVAP goals and targets for vaccine-preventable disease control and may be missing out on opportunities to benefit from new life-saving vaccines. The concern is partly fuelled by the realization that the majority of vaccine-preventable deaths globally are now in MICs [40].

The Region has 21 MICs[25] that together account for 46% of its population and 54% of the birth cohort. These include seven lower-middle-income countries (LMIC)[26] that account for 11% of the regional population and 15% of the birth cohort; and 14 upper-middle-income countries (UMICs)[27] that account for 35% of the regional population and 39% of the regional birth cohort. All the LMICs were eligible for support from Gavi, the Vaccine Alliance (hereafter referred to as Gavi) though Ukraine has not received direct support from Gavi since 2008. The Region does not have any low-income countries as the time of writing this report.

In this section we examine the progress that Member States, stratified by income categories and Gavi-eligibility, have made with the implementation of the EVAP. Eligibility for Gavi support since 2015 is used as a proxy stratification index for ease of securing external support for immunization in the Region.

DISEASE ELIMINATION AND ERADICATION

The European Region has sustained its polio-free status since 2002. However, over half its Member States were assessed to be at intermediate or high risk for the spread of polio following importation or emergence of a poliovirus (see Figure 2). The risk status for Member States stratified by income levels and Gavi-eligibility is shown in Figure. 9. All three Member States that were assessed to be at high risk for spread of poliovirus are MICs that did not benefit from Gavi support.

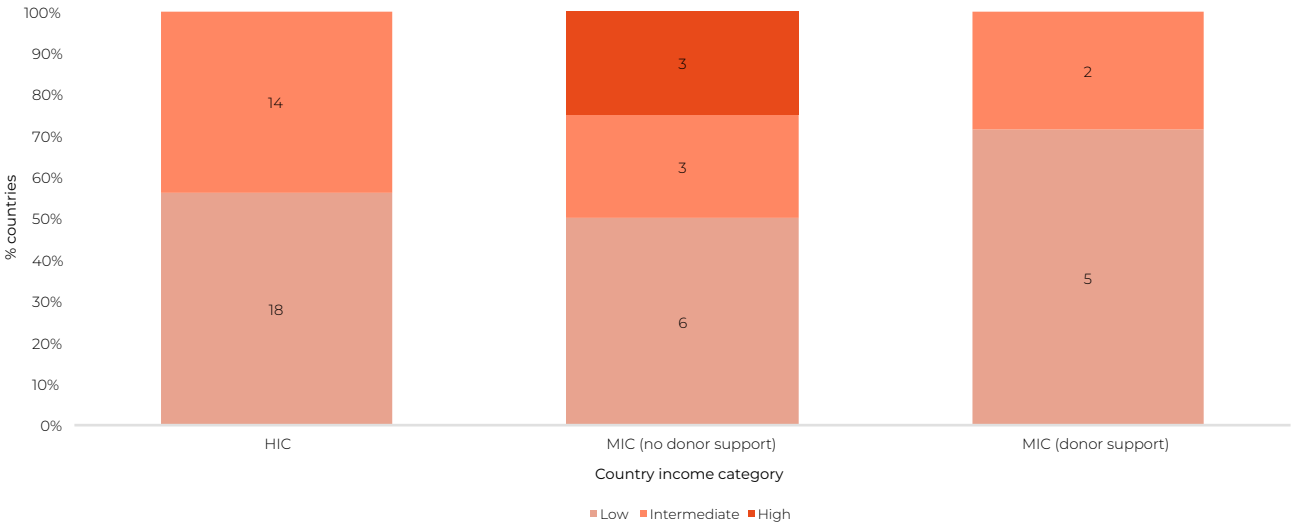
[24] Belarus, Bosnia and Herzegovina and Romania.

[25] Based on World Bank country classification by income levels: 2017-18. Available at:https://blogs.worldbank.org/opendata/new-country-classifications-income-level-2017-2018.

[26] Armenia, Georgia, Kyrgyzstan, Republic of Moldova, Tajikistan, Ukraine and Uzbekistan.

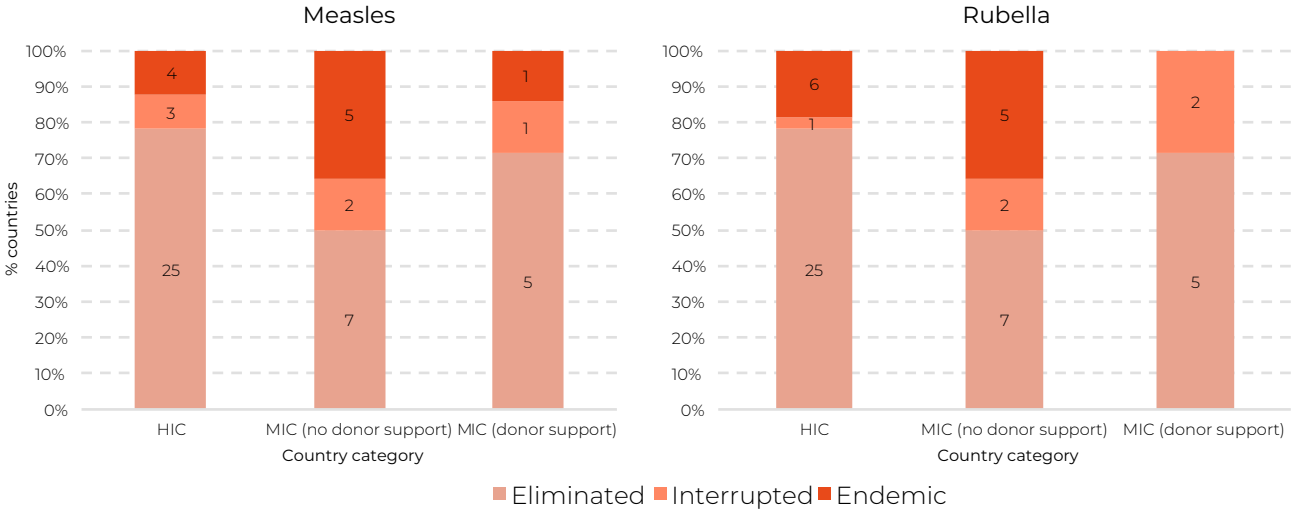
[27] Albania, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Kazakhstan, Montenegro, Romania, Russian Federation, Serbia, the former Yugoslav Republic of Macedonia, Turkey and Turkmenistan.

Figure 9: Risk of spread following poliovirus importation by country income category and availability of donor support, WHO European Region, 2017



Data source: WHO/Europe RCC Report
Note : In 2017, classification of two Member States, Bulgaria and Serbia are pending

Figure 10: Status of measles and rubella elimination by country income status and availability of donor support, WHO European Region, 2017



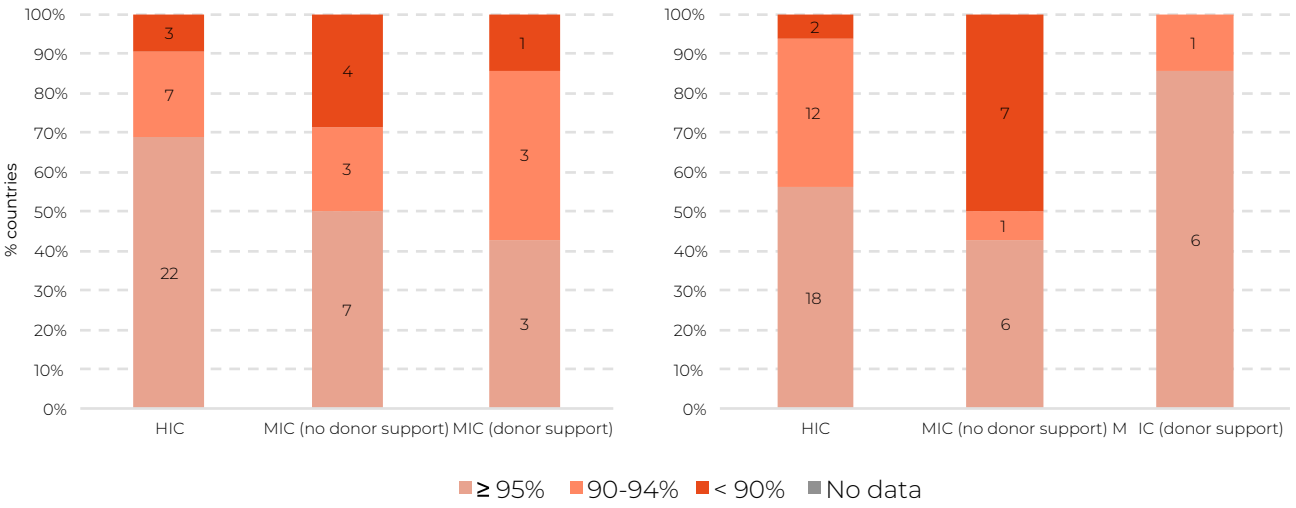
Data source: WHO/Europe RVC Report and World Bank Income level as of June-2017

Based on the evaluation of the RVC, HICs are more likely to have interrupted or eliminated transmission of measles than MICs (Figure 11). The pattern is similar for rubella. However, over half the measles cases reported in 2016 and 2017 occurred in the MICs that did not receive any donor support.

IMMUNIZATION COVERAGE

High and equitable coverage is fundamental to achieving and sustaining disease control goals and to improving the health of populations, especially the most vulnerable segments.

Figure 11: DTP3 and MCV1 coverage in Member States by income levels and availability of donor support, WHO European Region, 2017

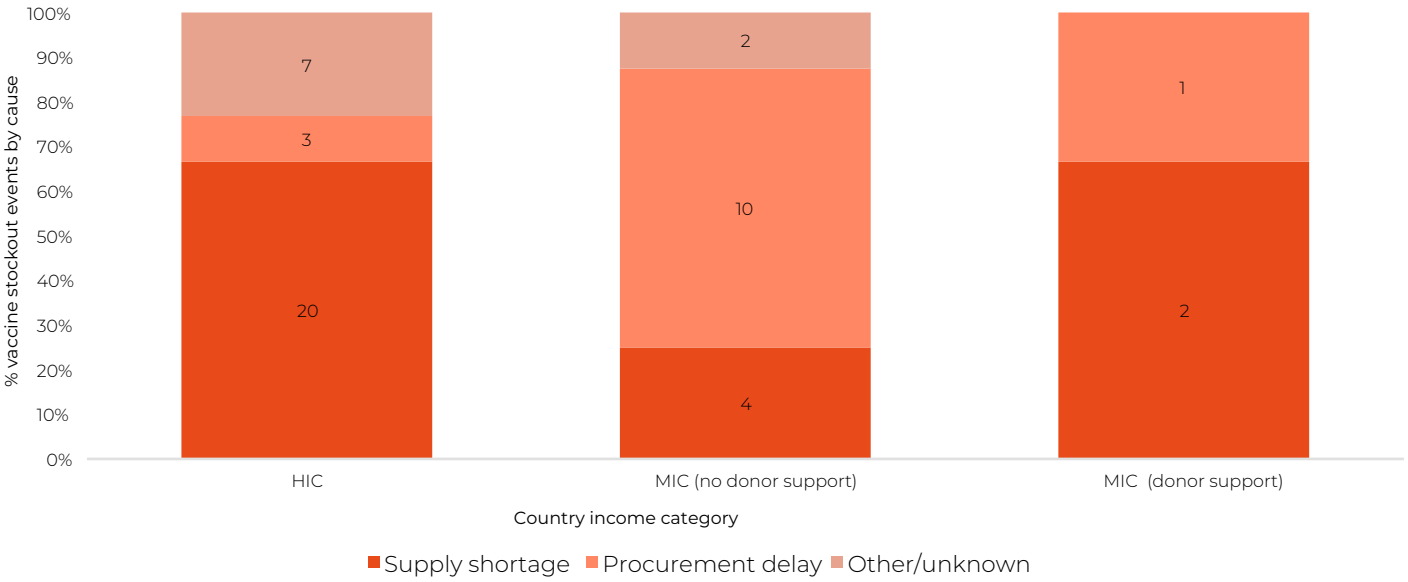


Data source: WHO/UNICEF coverage estimates and World Bank Income level as of June-2017

Of the MICs without donor support, a large proportion have coverage <90% for both DTP3 and MCV1 (Figure 11). While data are not available to conduct a comprehensive assessment of the root causes of lower coverage, an analysis of vaccine supply and stockout data suggests that the situation could be significantly improved if remedial action to prevent procurement delays is taken.

The 14 MICs without donor support reported 1w6 stockout events, 10 of which led to interruption in vaccination. While HICs also experienced vaccine stockouts that led to interruption in services, the causes of stockouts appeared to be different in the different income categories (Figure 12). Procurement delays, which could be remedied by improving the efficiency of the procurement process, were more often the cause of vaccine stockouts in MICs without donor support as compared to the other two categories.

Figure 12: Causes of vaccine stockouts by income levels and availability of donor support, WHO European Region, 2017



Data source: WHO/UNICEF Joint Reporting Form and World Bank Income level as of June-2017

INTRODUCTION OF NEW VACCINES

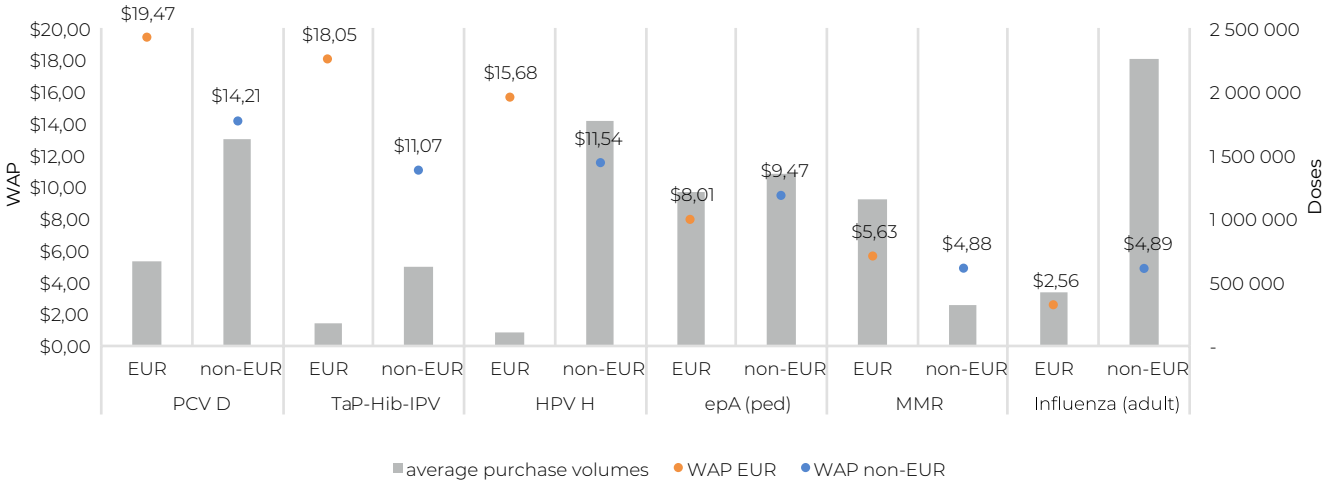
MICs without donor support also lag behind HICs and MICs with donor support in introducing new and underutilized vaccines into their national programmes. Five of the 14 Member States in the first category have not introduced either PCV, RV or HPV into their national programmes, whereas all the 32 HICs and the seven MICs that benefit from donor support have introduced either one or more of these vaccines.

Table 7: Status of measles and rubella elimination by country income status and availability of donor support, WHO European Region, 2017

INCOME CATEGORY	NUMBER OF VACCINES INTRODUCED BY MEMBER STATES (OF PCV, RV AND HPV)			
	0	1	2	3
HIC	0	4	15	13
MIC (no Gavi support)	5	9	0	0
MIC (with Gavi support)	0	3	1	3

Price is one of the reasons for the slow introduction of new vaccines in MICs. Figure 13 shows the weighted average price (WAP) of selected vaccines in self-procuring MICs without donor support in the European Region compared to similar countries in other regions. The WAP for both PCV and HPV are higher in this Region than in other regions.

Table 7: Status of measles and rubella elimination by country income status and availability of donor support, WHO European Region, 2017



Vaccines were selected based on sufficient data for analyses – data for single-dose presentations from at least three countries in both European and non-European regions
Data source: V3P Region Fact Sheet. European Region - http://www.who.int/immunization/programmes_systems/procurement/v3p/platform/module2/V3P_Region_Fact_Sheet_EUR.pdf?ua=1

There is also a wide range in prices for the same vaccine in the Region, likely influenced by several factors, including the procurement process and the terms and conditions for procuring the vaccine, the choice of product and presentation, as well as the volumes purchased.

Allocation of domestic resources for procurement of vaccines could be another factor that may be contributing to the slower uptake of new vaccines in these MICs without donor support. The data presented in Chapter 6 indicates that there is fiscal space available for those Member States lagging behind to enhance the financing of immunization programmes to get back on track.

CONCLUSION

The available data shows that MICs without donor support are lagging behind and unless corrective measures are taken, the decline or stagnation in their performance could pose a threat to their national progress and the regional achievement of EVAP goals and targets. MICs in the Region seem to be paying a higher price for procuring vaccines, though the causes for the higher prices need further investigation. Several MICs are allocating a smaller percentage of their health expenditures for immunization than their peers even though the return on investments in immunization is higher than in many other health programmes.

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V

Progress Report for the South-East Asia Region

INTRODUCTION

The 11 countries of the World Health Organization's (WHO's) South-East Asia (SEA) Region are home to more than 1.8 billion people, with a combined annual birth cohort of more than 37 million infants. All countries in the Region give high importance to their national immunization programmes (NIPs). Over the past few decades, immunization has prevented millions of deaths and disabilities, stopped the transmission of wild poliovirus across the Region, eliminated maternal and neonatal tetanus (MNT) and reduced the transmission of measles, Japanese encephalitis (JE) and hepatitis B viruses. High-quality regional surveillance and accredited laboratory networks have been established to measure disease burden, detect outbreaks and evaluate vaccination impact for many vaccine-preventable diseases. The Region was declared 'polio-free' in March 2014 and achieved MNT elimination in May 2016. The Sixty-sixth SEA Regional Committee in September 2013, adopted the Resolution on elimination of measles and control of rubella/congenital rubella syndrome (CRS) in the SEA Region by 2020.

The South-East Asia Regional Vaccine Action Plan (SEARVAP) 2016-2020 has been developed and serves as the framework for implementation of all immunization activities within the Region. The SEARVAP defines a clear vision for immunization and is backed by a set of guiding principles – ownership, responsibility and partnership, equity, integration, sustainability and innovation. The Plan describes a set of goals and objectives for immunization and highlights priority actions, targets and indicators that address specific needs and challenges of countries of the Region.

The SEA Regional Immunization Technical Advisory Group has recognized the initiatives of National EPI programmes to implement recommended activities to meet the goals and has acknowledged that NITAGs of all countries have begun to complete the annual reports on implementation. The Region is also a key vaccine manufacturing hub that exports high-quality vaccines worldwide.

SOUTH-EAST ASIA REGIONAL VACCINE ACTION PLAN: 2016-2020

The SEARVAP has eight goals (Box 1) and a set of strategic objectives and recommended activities to achieve the goals.

BOX1: SEARVAP GOALS

GOAL 1: Routine immunization systems and services are strengthened
GOAL 2: Measles is eliminated and rubella/CRS controlled
GOAL 3: Polio-free status is maintained
GOAL 4: Elimination of maternal and neonatal tetanus is sustained
GOAL 5: Control of Japanese encephalitis is accelerated
GOAL 6: Control of hepatitis B is accelerated
GOAL 7: Introduction of new vaccines and related technologies is accelerated
GOAL 8: Access to high quality vaccines is ensured

The progress in implementation of activities targeted towards the achievement of the SEAR VAP goals and objectives is described below.

GOAL 1: ROUTINE IMMUNIZATION SYSTEMS AND SERVICES ARE STRENGTHENED

BACKGROUND

Strengthening routine immunization systems and services is the overarching goal of the Regional Vaccine Action Plan 2016-2020. The objective of this goal is improving immunization coverage in all countries of the Region with the following targets:

- By 2020 all countries have 90% national coverage for all vaccines in national programmes;
- By 2020 all countries have ≥80% coverage for all vaccines in every district or equivalent.

ACHIEVEMENTS/PROGRESS

Concerted efforts are being made by all countries of the Region to improve coverage with all vaccines provided in their national programme. Plans for intensification of routine immunization have been incorporated into the comprehensive multi-year plans for immunization in all countries. As per WHO- UNICEF estimates, Maldives and Sri Lanka have achieved more than 90% coverage for all vaccines provided during infancy in their national immunization programme, while Bangladesh, DPR Korea and Thailand have achieved more than 90% coverage

for all vaccines, except for the inactivated poliovirus vaccine (IPV), primarily due to global shortage of this vaccine.

The overall coverage with three doses of DPT vaccine (DPT3) in the Region has increased to 88% in 2017. Seven out of the 11 countries in the Region have achieved overall DPT3 coverage of more than 90% in 2017. These countries include Bangladesh, Bhutan, Democratic People's Republic of Korea, Maldives, Nepal, Sri Lanka and Thailand. Five countries (Bangladesh, Democratic People's Republic of Korea, Maldives, Sri Lanka and Timor-Leste) have achieved the target of 80% or more coverage with DPT3 in all districts.

Table 1: . DTP3 coverage by country, 2013-2017*

COUNTRY	DTP				
	2013	2014	2015	2016	2017
Bangladesh	96	97	97	97	97
Bhutan	97	99	99	98	98
DPR Korea	93	93	96	96	97
India	83	85	87	88	88
Indonesia	85	78	78	79	79
Maldives	99	99	99	99	99
Myanmar	75	88	89	90	89
Nepal	92	92	91	87	90
Sril Lanka	99	99	99	99	99
Thailand	99	99	99	99	99
Timor-Leste	82	77	76	76	76
SEAR	**85**	**86**	**87**	**88**	**88**

*Source: WHO-UNICEF estimate for DPT3 coverage

INDIVIDUALS AND COMMUNITIES UNDERSTAND THE VALUE OF VACCINES AND DEMAND IMMUNIZATION AS BOTH THEIR RIGHT AND RESPONSIBILITY

Countries in the Region engage communities in effective discussions about their knowledge, attitudes, and practices as they relate to immunization and health services in general. Countries in the Region are implementing and evaluating strategies to increase community demand for immunization. All countries are building capacity by training front-line health workers in effective communication techniques and recruiting new voices to champion immunizations. In the EPI coverage evaluation surveys (CES) knowledge of care takers on immunization, sources of immunization and reasons for not vaccinating or partial vaccination are evaluated. The CES in Bangladesh and Nepal has identified vaccine hesitancy as a challenge while potential issues of vaccine hesitancy have also been identified in some areas of India and Indonesia.

STRENGTHENING SURVEILLANCE FOR VACCINE-PREVENTABLE DISEASES

Countries have either strengthened vaccine preventable disease (VPD) surveillance within the integrated disease surveillance or improved VPD surveillance by building on the high-quality AFP surveillance structures established for polio eradication. Regional vaccine preventable disease surveillance guidelines have been published and released in 2018. The SEA Region conducts weekly case-base reporting for AFP backed with a network of 16 polio laboratories, including one global-specialized laboratory and two regional reference laboratories. Weekly case-based reporting for measles and rubella is carried out in all countries in the Region. Bangladesh, India, Myanmar and Nepal use the WHO-supported network of surveillance medical officers, initially established for polio eradication.

IMMUNIZATION PROGRAMMES HAVE SUSTAINABLE ACCESS TO PREDICTABLE FUNDING, QUALITY SUPPLY AND INNOVATIVE TECHNOLOGIES

According to the 2015 World Bank categorization, two countries in the SEA Region are low-income (Nepal and DPR Korea), seven are lower-middle income (Sri Lanka, Bhutan, India, Indonesia, Myanmar and Bangladesh) and two are upper-middle income (Thailand, Maldives). According to the Gavi-eligibility criteria, two countries (DPR Korea and Nepal) belong to the initial self-financing stage, three countries (Bangladesh, India and Myanmar) to the preparatory transition stage, two countries (Indonesia and Timor-Leste) to the accelerated transition stage and two countries (Bhutan and Sri Lanka) to the fully self-financing stage.

All 11 countries in the Region have a line item for vaccines in the national budget. Maldives and Thailand are fully funding routine immunization programme including vaccines. Indonesia and Sri Lanka are funding more than 50% of the routine immunization activities including vaccines.

MONITORING AND EVALUATION OF IMMUNIZATION PERFORMANCE

Periodic EPI and surveillance reviews continue to be conducted in countries of the SEA Region to assess immunization system performance. Recommendations from these reviews are being followed up to ensure improvement in immunization coverage. EPI and surveillance reviews have been conducted in Sri Lanka, Thailand and Timor-Leste between 2014 and 2016 and in Myanmar in 2017. A review has been conducted in DPR Korea in 2018 with plans to conduct a review in Bangladesh later this year.

National immunization technical advisory groups (NITAGs) have been established in all SEA Region countries. The NITAGs are involved with the monitoring of progress in routine immunization coverage, in addition to their other functions. The Regional Immunization Technical Advisory Group monitors the progress of implementation of national immunization plans and the recommendations of the EPI reviews.

NEED-BASED TAILORED APPROACHES IN COUNTRIES

Country-specific actions, as per needs, are being implemented to improve coverage and equity with all vaccines provided under the national immunization programme in countries of the Region, with a focus on identification of the high-risk populations and underserved areas for targeted and tailored approaches to reach children in these areas. Notable among these interventions are the following:

Bangladesh: Country is maintaining high coverage nationally and in rural areas and has developed an urban immunization strategy to improve the coverage in urban areas. Following the sudden influx of migrant refugees in Cox's Bazar area of the country, an aggressive immunization response was mounted to prevent/control outbreaks of vaccine-preventable diseases. Nine vaccination campaigns were conducted between August 2017 and May 2018 in the camps where the migrant refugees are residing and more than 4.5 million doses of various vaccines (bivalent OPV, MR vaccine, pentavalent vaccine, Td vaccine, PCV and oral cholera vaccine) were administered during these campaigns. Routine EPI services have also been established in the Cox Bazar area to ensure vaccination of new cohorts and migrants with all EPI vaccines.

Bhutan: The country has achieved and maintained high coverage, but continues to focus on the areas with significant migration as well as on hard-to-reach populations by identifying these areas and populations and conducting periodic catch-up vaccination campaigns to maintain high population immunity against all vaccine-preventable diseases.

DPR Korea: DPR Korea has maintained more than 90% DPT3 coverage nationally and in all districts. Five northern provinces were given additional focus to sustain high coverage. Coverage evaluation survey conducted in 2017 validated the high routine immunization coverage in the country.

India: India established an Immunization Technical Support Unit to support the Ministry of Health; and launched *"Mission Indradhanush"* from 2015-2017 – a major multi-phase campaign to boost routine immunization. This equity focused mission applied a range of polio strategies and assets to focus on identified high-risk populations in traditionally low-coverage or underserved areas with insufficient health services; 6.7 million children were fully immunized while 6.8 million pregnant women received the vaccine during this intensification effort. India reassessed the achievements and targeted 173 districts and 17 cities through the "*Intensified Mission Indradanush"* in 2017–2018; 1.4 million children were fully immunized and 1.2 million pregnant women vaccinated during this effort.

Indonesia: Remote islands and hard-to-reach areas were identified and supported for immunization coverage improvements; additional operational costs were allocated for these areas; new cold chain equipment was provided; and a communication strategy for immunization developed that included directives from religious leaders in support of the immunization programme. Eighty districts are being targeted for intensification of routine immunization through various strategies such as sustained outreach strategy and dropout follow-up and sweepings. Defaulters tracking guidelines for health centres have been revised for a better tracking of the partially vaccinated children. Indonesia has declared 2018 as the "immunization acceleration year".

Maldives: Immunization is a high priority programme in the country. One of the best practices followed is the verification at the time of entry into school about the completion of childhood vaccine doses. The country has maintained very high coverage with DPT3 since 2012. The strong platform for routine immunization has been used to introduce many new vaccines in Maldives.

Myanmar: New approaches such as providing immunization services through 98 major hospitals, urban immunization project in 32 townships, improvement of cold chain and data management capacity by using modern information technologies have contributed to improved coverage in Myanmar. The country has focused on closing immunity gaps in hard-to-reach areas through improvements in microplanning for 'Reaching Every Community'.

Nepal: Nepal introduced the concept of achieving fully immunized districts through the Full Immunization Declaration (FID) initiative in 2012. The initiative aimed to increase community ownership and commitment through positive behavioural reinforcement of individuals and groups. Heath workers followed a rigorous method of line listing target children and immunizing

them, followed by a validation by the district team. A full immunization declaration of the district was done only after all sub-district level units had been validated. As of April 2018, 42 districts in the country have been declared fully immunized. An Immunization Act was passed in Parliament in 2016 ensuring the right to vaccination and the provision of quality vaccines for children. The country celebrates the month of April as the month of RI Intensification and conducts various innovative activities during the month to motivate health workers, as well as to enhance RI coverage.

Sri Lanka: Sri Lanka maintained 99% DPT3 coverage and more than 90% coverage in all districts. The Parliament and Cabinet approved the National Immunization Policy 2014 that envisages a political, economic and highly technical environment to support the intensification and strengthening of routine immunization. Regular supervision, national and subnational EPI/VPD reviews and field-level coverage surveys are used by the national programme to identify gaps in immunization programme performance and to address these in a timely manner.

Thailand: Thailand has maintained high vaccination coverage at the national level through its strong routine immunization system. The country has also started to monitor subnational data since 2016 to provide regular feedback and input to the subnational level to enhance coverage where required. The country has focused on data quality and used high-quality data to identify gaps in routine immunization and develop performance improvement plans. The strong RI platform has been used to introduce many new vaccines in Thailand.

Timor-Leste: The DPT3 immunization coverage of Timor-Leste has increased from 67% in 2011 to 76% in 2017. The country ensured strong advocacy for adequate funding for outreach immunization services, and rapidly built capacity of the immunization workforce with close monitoring by external consultants at the subnational level. The country has increased the number of vaccine storage cold chain points from 68 (community health center level) to 127 (health post-level). An effective vaccine management (EVM) assessment was conducted and an improvement plan is under implementation. A twining programme has been initiated with the EPI programme in Sri Lanka to strengthen the technical capacity of the national and subnational programme managers.

KEY CHALLENGES:

- → Despite an increase in the DPT3 coverage to 88% in 2017, an estimated 4.4 million children in the Region do not receive three doses of DPT containing vaccine. An estimated 3.1 million of these are in India and 1 million in Indonesia.
- → Outbreaks of vaccine-preventable diseases continue to occur in many countries of the Region, indicating low coverage pockets, even in countries/provinces/districts with high coverage.
- → Diphtheria outbreaks have been reported in various countries of the Region during 2017-2018 due to chronic immunity gaps as well as policy barriers in countries of the Region. The policy barriers include insufficient booster doses of diphtheria toxoid-containing vaccine and/or not providing vaccines to unvaccinated children who report to health system beyond their first year of life.
- → Surveillance for vaccine-preventable diseases, other than polio and measles, remains sub-optimal in many countries of the Region. Laboratory capacity for non-polio, non-measles diseases remains variable in countries of the Region.
- → Data quality and the use of surveillance and monitoring data to guide strategic interventions remains weak, especially in large countries.
- → Vaccine hesitancy in various countries requires development of communication strategies to ensure that demand for vaccines is increased leading to improved coverage.
- → Polio-funded human resources are supporting overall immunization activities and an estimated 50% of their time is being utilized for these non-polio activities. The global polio eradication initiative has indicated that polio funding will decline from 2017 to 2019 and eventually stop in 2020. This could potentially inhibit progress towards the achievement of immunization goals unless alternative sources of funding are identified.
- → A substantial GAVI support goes to low income countries. However, some low-middle income countries (examples: Indonesia and Timor-Leste) are in GAVI transition phase and have sub-optimal immunization coverage. This poses a risk for the immunization coverage improvement in these countries unless alternative funding sources, including from national governments are quickly mobilized.

GOAL 2: MEASLES IS ELIMINATED AND RUBELLA/CRS CONTROLLED

BACKGROUND

The WHO Regional Committee for South East Asia Region (SEAR), during its 66th session in September 2013, adopted a Resolution to eliminate measles and control rubella/congenital rubella syndrome (CRS) in the Region by 2020.

The Region has observed a significant reduction in the incidence of reported measles cases (from 51 cases in 2000 to 14 cases per million population in 2016) and a 73% reduction in measles deaths during 2000 to 2016. The measles elimination drive has gathered crucial momentum. Bhutan and Maldives have been verified as having eliminated endemic measles and no measles cases have been reported in Timor-Leste and DPR Korea for more than 24 months.

A mid-term review (MTR) of the "Strategic Plan for Measles Elimination and Rubella and Congenital Rubella Syndrome Control in the South-East Asia Region" identified that all basic elements enunciated in the strategy are sound but will require full implementation adapting to local realities and context.

PROGRESS/ACHIEVEMENTS

Achieve and maintain >95% population immunity with two doses against measles and rubella within each district of each country in the region through routine and/or supplementary immunization.

All countries in the Region have introduced two doses of measles-containing vaccine and nine countries have introduced Rubella-containing vaccine in their RI schedule. The coverage of MCV1 (first dose of measles-containing vaccine) in the Region has improved marginally from 84% in 2013 to 87% in 2017 although five countries have reported coverage of more than 95% at national level. The coverage of MCV2 (second dose of measles-containing vaccine) has increased from 58% in 2013 to 77% in 2017. The coverage of rubella-containing vaccine in routine immunization is reported at around 21% for the Region in 2017, primarily because the two large countries, India and Indonesia have yet to ensure nationwide introduction of rubella-containing vaccine. An estimated 181 million additional children have been reached through mass vaccination campaign with measles-containing vaccine between 2014 and 2017 and another 400 million children are planned to be vaccinated through SIA during 2018-2019. A lessons learned workshop was organized in January 2018 to share lessons from six big countries on closing the immunity gap for measles and rubella so that the cross-sharing of lessons would be helpful to ensure high coverage for measles and rubella-containing vaccine through routine and supplementary immunization activities in the Region.

Table 2: Reported measles cases and MCV1 and MCV2 coverage, SEAR 2003 – 2017

COUNTRY	2003			2017		
	WHO/UNICEF estimated coverage		No. of reported measles cases (JRF)§	WHO/UNICEF estimated coverage		No. of reported measles cases (JRF)
	MCV-1	MCV-2		MCV-1	MCV-2	
Bangladesh	76	-	4,067	94	96	4001
Bhutan	88	-	0	97	99	66
DPR Korea	95	-	0	99	98	0
India	60	-	47 147	88	76	12 032
Indonesia	74	21**	24 457	76	63	9 035
Maldives	96	-	75	99	99	1
Myanmar	80	-	830	91	86	1 293
Nepal	75	-	13 344	90	59	99
Sri Lanka	99	90	65	99	99	1
Thailand	96	92	4 519	99	95	1 946
Timor-Leste	55	-	94	76	56	0
SEAR	63	27	94 598	87	77	28 474

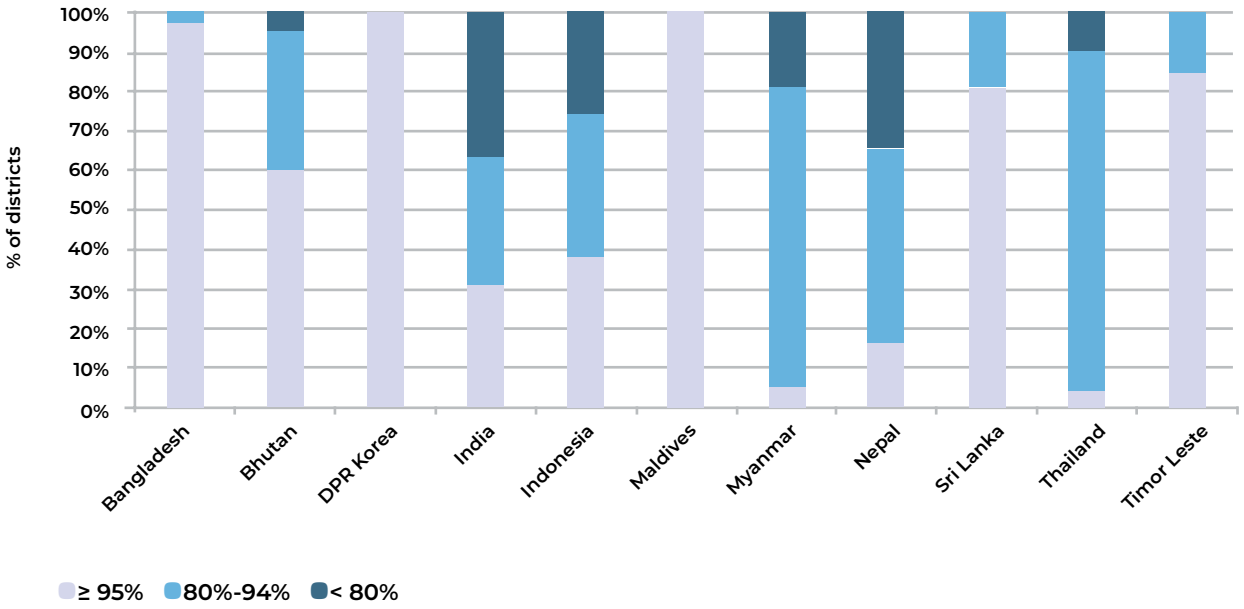
Abbreviations: MCV=Measles containing vaccine; M=Measles; MR=Measles-Rubella; MMR=Measles-Mumps-Rubella; m=month; y=year; hyphen used (-) when MCV is not introduced in routine immunization `

Source of data: WHO/UNICEF estimates of national immunization coverage. In: World Health Organization. Immunization, Vaccines and Biologicals. Immunization coverage (online database).Geneva: World Health Organization; 2017. (http://www.who.int/immunization/monitoring_surveillance accessed 29July 2018).

§ The Joint Reporting Form (JRF) is submitted to WHO and UNICEF by countries annually and reports, among other data, the number of measles cases in the country for the year.

****** Sub-national introduction in schools of West Java at 7 years

Figure 1: Reported MCV1 coverage at district level, SEAR 2017



Source: Annual Epidemiological Reporting
Form received by all countries in WHO SEARO for 2017

Immunization activities in the Region has averted nearly 622 000 deaths due to measles in 2017. However more than 4.6 million children are still not reached by the first dose of measles-containing vaccine, mostly in India (~3.1 million) and Indonesia (~1.1 million).

Develop and sustain a sensitive and timely case-based measles and rubella and CRS surveillance system in each country in the region that fulfils recommended surveillance performance indicators

All countries in the Region are conducting case based surveillance for measles and rubella with India and Indonesia still expanding. The surveillance performance indicators are gradually being strengthened with non-measles non-rubella discarded rate (a proxy to the sensitivity of surveillance) at 0.71 in 2017 compared to 0.41 in 2016, still much below the target of two per 100,000 populations indicating that the sensitivity of the surveillance is still around 36% or less. It is noteworthy that five out of 11 countries have achieved the target non-measles-non-rubella discard rate of 2 per 100,000 population in 2017 compared to three countries in 2016. CRS surveillance is conducted in all countries – in eight as sentinel site surveillance while as part of integrated disease surveillance in the remaining three.

Table 3: Key field surveillance performance indicators, SEAR 2017

COUNTRY	NUMBER OF SUSPECTED MEASLES CASES	ADEQUATE INVESTIGATION WITHIN 48 HOURS	DISCARDED NON-MEASLES NON-RUBELLA INCIDENCE PER 100,000 TOTAL POPULATION	SUBNATIONAL UNITS WITH TWO DISCARDED NON-MEASLES NON-RUBELLA CASES PER 100,000 TOTAL POPULATION
Bangladesh	8 028	94	2.29	58%
Bhutan	490	93	52.14	85%
DPR Korea	110	99	0.45	ND
India	21 511	0	0.22	3%
Indonesia	13 225	0	1.56	16%
Maldives	66	97	18.91	60%
Myanmar	1 746	39	0.87	15%
Nepal	1 036	96	3.20	59%
Sri Lanka	242	98	1.03	19%
Thailand	3 005	28	1.23	ND
Timor-Leste	133	100	9.90	38%
SEAR	**49 592**	**22**	**0.71**	**-**

Source: SEAR measles rubella case based database, weekly reports from countries, updated 11 June 2018

DEVELOP AND MAINTAIN AN ACCREDITED MEASLES AND RUBELLA LABORATORY NETWORK THAT SUPPORTS EVERY COUNTRY OR AREA IN THE REGION

The SEAR measles rubella laboratory network comprises 40 WHO accredited laboratories (one regional reference lab, 25 national laboratories and 14 sub-national laboratories), with at least one WHO accredited laboratory in each country in 2017, compared to only 23 laboratories in the Region in 2012. The network plans to include 10 additional laboratories by end-2018: six in India, three in Indonesia and one in Nepal. Of the 49,567 suspected measles cases in the Region in 2017, around 31,929 (64%) were tested in the laboratory network for serology. Of these, 13,209 (41%) were IgM (Immunoglobulin M) positive for measles and 5,382 (17%) positive for rubella IgM. Around 93% of serology specimens were received in the laboratory within five days of specimen collection and in 53% of the cases serology results were reported within four days of the receipt of the samples by the laboratory. Numbers of laboratories with capacity to perform molecular testing (genotyping PCR) have increased from 15 laboratories in four countries in 2014 to 25 laboratories in 10 countries in 2017. Numbers of nucleotide sequence genotypes data submitted to MeaNS has increased from 41 genotypes in year 2012 to 1,933 genotypes in 2018 (data as of 31 May 2018).

Table 4: Key Laboratory surveillance performance indicators SEAR 2017

COUNTRY	NUMBER OF SUSPECTED MEASLES CASES	LABORATORY CONFIRMED MEASLES	LABORATORY CONFIRMED RUBELLA	SERUM SPECIMENS RECEIVED IN WITHIN 5 DAYS	SEROLOGY RESULTS AVAILABLE WITHIN 4 DAYS	MEASLES CASES WITH VIROLOGY
Bangladesh	8 028	2 612	240	100	64	12%
Bhutan	490	70*	8	82	53	55%
DPR Korea	110	0	0	100	99	ND
India	21 511	3 270	747	95	59	10%
Indonesia	13 225	4 636	4 327	97	36	ND
Maldives	66	1*	1	100	71	30%
Myanmar	1 746	1 001	6	99	93	12%
Nepal	1 036	64	22	45	73	53%
Sri Lanka	242	1	2	92	64	27%
Thailand	3 005	1 532	24	59	59	ND
Timor-Leste	133	0	5	100	67	46%
SEAR	**49 592**	**13 187**	**5 385**	**93**	**53**	**-**

Source: SEAR measles rubella case based database, weekly reports from countries, updated 11 June 2018

Strengthen support and linkages to achieve the three strategic objectives listed above

All eleven countries have a functional National Verification Committee for Measles Elimination and Rubella-CRS control and a Regional Commission at the Regional level. All countries have developed a national plan for measles elimination and rubella control by 2020. An outbreak preparedness and response plan has been developed in Bangladesh, Bhutan, Maldives and Timor-Leste. With increased demand for conducting supplementary immunization activities with MR vaccine in large countries and considering only one vaccine manufacturer in the Region, MR vaccine availability becomes an important issue. A timely forecast by all countries will be essential to allow manufacturers to have a sufficient lead time to produce and supply the required quantities of MR vaccine.

KEY CHALLENGES:

- Immunization: The MCV1 coverage in the region in 2017 is 87% while MCV2 coverage is 77% - both much below the desired levels required for achieving the goal of measles elimination. Sub-optimal coverages with MCV1 and MCV2 lead to low immunity and continued outbreaks of measles and rubella in these areas. The coverage of rubella-containing vaccine in routine immunization is around 21% for the Region in 2017 – much below the desired levels to achieve rubella/CRS control in the Region.
- Surveillance: Sensitivity of the surveillance system for measles, rubella and CRS remains below the standards required for verification of measles elimination and rubella/CRS control. A broadening of the case definition of suspected measles and/or increasing the number of reporting sites is essential to improve the sensitivity of surveillance. Additional training and financial resources will be required to ensure this. Virology is being conducted for very few chains of

transmission and this will have to be enhanced as countries get closer to the measles elimination target.

→ Linkages: Cross border collaboration and synchronized outbreak response plan needs to be developed in all countries in the Region.

→ Human resources: Polio-funded human resources and systems have been established in five countries of the Region over the past two decades to support polio eradication activities. This workforce has been increasingly supporting surveillance and immunization activities for measles elimination and rubella/CRS control over the past years. The Global Polio Eradication Initiative has now indicated a ramp down of polio funding between 2017 and 2019, followed by an eventual cessation of this funding. This poses a huge risk to the goal of achieving measles elimination and rubella/CRS control in the Region.

GOAL 3: POLIO-FREE STATUS IS MAINTAINED

BACKGROUND

The Regional Certification Commission for Poliomyelitis Eradication (RCCPE), during its 10th meeting in November 2017, concluded that the Region has maintained its polio-free status. The RCCPE commented that wild poliovirus (WPV) importation remains a risk as long as there is WPV circulation in some parts of the world. The RCCPE furthermore concluded that VDPV detections in 2016 (in India and Myanmar) and 2017 and 2018 (in India) have been promptly and adequately responded to. The Emergency Committee (EC) of the IHR, during its 15th meeting in November 2017, concluded that, following the efficient response to the 2016 cVDPV2 polio outbreak, Myanmar would no longer be subject to implementing the temporary recommendations of the EC to limit the international spread of polioviruses.

ACHIEVEMENTS/PROGRESS:

Acute flaccid paralysis (AFP) and environmental surveillance (ES)

The overall non-polio AFP rate in the SEAR in 2017 was 7.10 (data as per week 24, 2018) per 100,000 population under 15 years of age which exceeds the globally recommended operational target of 2 per 100,000. The non-polio rate was above 2 in 2017 in seven SEAR countries, namely Bangladesh, Bhutan, India, Indonesia, Maldives, Myanmar and Nepal, while it was between 1 and 2 (which meets certification standards) in three countries, namely DPR Korea, Sri Lanka and Thailand. The non-polio AFP rate of Timor-Leste was less than 1 per 100,000 population under 15 years of age. In 2017, two stool samples were collected at least 24 hours apart and within 14 days of onset from 86% of the reported AFP cases in the Region, as against the globally recommended target of at least 80%. Nationally, the target was achieved in 2017 by eight countries, namely Bangladesh, Bhutan, DPR Korea, India, Indonesia, Myanmar, Nepal and Sri Lanka. For both performance indicators, there is considerable subnational variance in several countries.

In 2017, environmental surveillance (ES) activities in the Region have been expanded to include additional sites in Indonesia and India and initiated in Myanmar and Nepal. A total number of 63 sites in 23 provinces of six countries - namely Bangladesh, India, Indonesia, Myanmar, Nepal and Thailand - are currently conducting ES. Bangladesh is operating four temporary sites in Cox's Bazaar. ES data provided important evidence for the disappearance of Sabin like poliovirus type 2, following the switch from trivalent OPV (tOPV) to bivalent OPV (bOPV) during 2016.

No VDPVs were detected in AFP cases in 2017 and during the period January to May 2018. A type 2 VDPV was detected in sewage samples in India in 2017 and a detailed risk analysis conducted which concluded that the event was low risk, no evidence of circulation was found and it had been adequately responded in terms of surveillance and routine immunization strengthening. Investigations have also been completed in the area in India, where in May 2018, a type 3 VDPV was isolated in a sewage sample. Response measures taken include strengthening AFP surveillance and improving routine coverage with bOPV and intradermal IPV in the catchment area.

The SEAR polio laboratory network (RPLN) is composed of 16 laboratories in seven countries (Bangladesh, DPR Korea, India, Indonesia, Myanmar, Sri Lanka and Thailand) and includes one global specialized laboratory and two regional reference laboratories. In addition, to enhance ES, three sewage concentration laboratories were established; two in India (Hyderabad, Patna) and one in Nepal. The concentrated samples are shipped to polio laboratories in Mumbai and Thailand, respectively.

The network tested >85,000 stool specimens in 2017 and timeliness of reporting primary culture results within two weeks of receipt of samples was 94.1% (global requirement of ≥80%). This indicates a very high level of competence in the RPLN. Accreditation visits reaffirm that the laboratories in the network have updated standard operating procedures for safe handling of AFP specimens, viral isolates and are meeting the global benchmarks for polio virus diagnostics.

Population immunity through routine immunization (RI) and supplementary immunization activities (SIAs)

Seven SEAR countries - namely Bangladesh, Bhutan,

Democratic Republic of Korea, Maldives, Nepal, Sri Lanka and Thailand - have reported OPV3 coverage above 90% while India, Indonesia, Myanmar and Timor Leste have coverage between 80-90% in 2017. To close immunity gaps against polio SIAs with OPV were conducted in 2017 in Bangladesh, India, Myanmar and Nepal.

IPV introduction, challenges and actions to mitigate the risks

As no type 2 containing OPV has been used in the Region since April 2016, IPV as included in the national routine immunization schedules of all countries, is the only source of type 2 immunity since then. In view of the global supply constraints and in the context of studies that demonstrate that two doses of intradermal IPV (one fifth of the full dose) are superior to one intramuscular dose of IPV, India and Sri Lanka, are providing two intradermal doses of IPV to all infants since mid-2017. Stock-outs of IPV occurred in four countries (Bangladesh, Bhutan, DPR Korea and Nepal). Supplies have been restored to all four countries. Bangladesh has shifted to a two-intradermal dose schedule, while preparations for the same are currently underway in Nepal and it is likely that the country will also introduce a two-dose intradermal IPV schedule by August 2018. Bhutan and DPR Korea have already re-introduced IPV in 2018. Catch-up of missed cohorts with IPV is being planned in Bhutan in 2018, using intradermal IPV, and in DPR Korea in 2019, using intramuscular IPV.

Poliovirus laboratory containment

Activities to contain type 2 polioviruses in facilities are progressing in the Region. Poliovirus essential facilities (PEF) have been identified to store/handle type 2 polioviruses in two countries of the Region, namely India and Indonesia. National authorities for containment (NAC) have been established in both countries and processes to undertake certification of these facilities as per the global containment certification scheme (CCS) have commenced. All Member States are completing new surveys of biomedical laboratories to meet requirements outlined in the 'WHO Global Action Plan to minimize poliovirus facility-associated risk after type-specific eradication of wild polioviruses and sequential cessation of oral polio vaccine use' (GAPIII). Special trainings on GAPIII requirements for national containment taskforces (NCTF), PEFs, NAC and vaccine manufacturers were successively completed in 2016 – 2017 and more capacity building activities are planned in late 2018 / early 2019. The RPLN has conducted several bio-risk management capacity building activities.

Countries are being supported with direct technical assistance to implement their activity plans for containment of Sabin2/OPV2 infectious and potentially infectious materials. One of the challenges in GAPIII implementation are involvement of facilities that collect, handle and store clinical and environmental samples for purposes other than polio research. These specimens also present a poliovirus transmission risk if samples were collected in a place and time where wild poliovirus or VDPV were circulating or OPV was being used. These facilities are at a disadvantage in that the potential presence of an infectious PV in such samples is both undesirable and uncertain. To support such laboratories,

WHO has developed 'Guidance for non-poliovirus facilities to minimize risk of sample collections potentially infectious for polioviruses (PIM)' which were pilot tested in Bangladesh in December 2017 in a workshop with high risk laboratories. All materials identified can be stored outside a PEF as per the PIM guidance.

Certification of maintaining polio free status

The Regional Certification Commission for Polio Eradication (RCCPE) and National Certification Committees for Polio Eradication (NCCPEs) in all 11 countries are functional and providing oversight and guidance for polio eradication activities. The 10th meeting of the South-East Asia Regional Certification Commission for Poliomyelitis Eradication (SEA-RCCPE) was successfully conducted from 23-24 November 2017 in Nay Pyi Taw, Myanmar. The RCCPE reviewed progress in each country in the Region and concluded that the Region has remained polio-free.

Transition planning

The five countries of the Region with substantial GPEI funded polio infrastructure are developing transition plans. These plans are in advanced stage and all country offices have a draft plan ready. The transition plan of Bangladesh has been formally endorsed by the Government. Fully mindful of the programmatic risks associated with the loss of polio networks, the transition plan development in SEAR countries is focusing on mechanisms to transfer the capacity to government, to the extent possible, exploring alternative financial support to make up for the loss of the GPEI funding and building capacity of polio teams to support 'new public health programs'. Realizing that the involvement of the governments is critical for the success of the transition process, an active engagement of the government during the polio transition plan development is at the centre of transition planning.

KEY CHALLENGES:

- → Maintaining high-quality AFP surveillance and sustaining high population immunity against polioviruses will become increasingly difficult during the post-eradication phase as countries turn towards other priorities and become complacent in implementing activities targeted to maintain polio-free status.
- → Price of IPV has increased significantly and is likely to remain as such until 2021. This will be a challenge both for middle-income countries and other countries.
- → Funding from the GPEI for polio assets (human resources, systems and processes) is declining and would eventually stop, making it increasingly difficult to sustain activities required to maintain the polio networks that are not only supporting activities to maintain polio-free status but are also supporting other public health initiatives in the Region. The involvement of the national governments and identification of alternative sources of funding to manage the polio-funded networks remains a challenge to mitigate the programmatic risks associated with the ramp-down of polio funding.
- → Although containment activities have been agreed upon and are in process, decreased funding and the need to address other priorities may distract countries from completing poliovirus containment activities in accordance with GAPIII to minimize poliovirus facility-associated risk after type-specific eradication of wild polioviruses and sequential cessation of routine OPV.

GOAL 4: ELIMINATION OF MATERNAL AND NEONATAL TETANUS (MNT) IS SUSTAINED

BACKGROUND

By the end of 1999, when a renewed initiative was launched by WHO and its partners, UNICEF and the UN Population Fund, the group of 57 countries yet to achieve the MNT elimination target included Bangladesh, India, Indonesia, Myanmar and Nepal. Timor-Leste joined this group when the country became independent. Following many years of strong routine immunization and quality surveillance systems it could be assumed that Bhutan, the Democratic People's Republic of Korea, Maldives, Sri Lanka and Thailand had already achieved MNT elimination before 2000.

With the globally recommended strategies, the Nepal, Bangladesh, Myanmar and Timor Leste reached the elimination goal and were validated by WHO in 2005, 2008, 2010 and 2012. respectively. Recognizing the high NT burden in the country, estimated at 150,000 to 200,000 cases annually based on studies, India committed to achieve MNT elimination through strengthening of routine immunization activities, including increasing tetanus toxoid containing vaccine (TTCV) coverage, improving clean delivery practices through institutional births, and training of birth attendants. The launch of the National Rural Health Mission (NRHM) in 2005 helped to strengthen these initiatives. India approached MNT elimination in a phased manner and on 15 April 2015, WHO confirmed that India had successfully eliminated MNT. This landmark achievement was the conclusion of an in-depth data review and community-based validation surveys, the last of which was conducted in Nagaland in April 2015, confirming that this state had reached the target. Indonesia following a phased approached, like in India, and on 19 May 2016 became the last country of the Region to achieve validation, following extensive data review and field surveys in Papua, considered the lowest performing province. By extension MNT elimination was concluded to have been reached in Indonesia as a whole. Indonesia's success is based on a combination of routine TTCV immunization of pregnant

women and "brides-to-be", school-based immunization (BIAS) with DT/Td as well as targeted supplemental TTCV immunization of all women of child bearing age in areas considered high risk for neonatal tetanus and also clean and safe deliveries.

In May 2016, the WHO South-East Asia Region was the second among the six WHO Regions (the European Region being the first) to have achieved MNT elimination.

ACHIEVEMENTS

All countries in the Region follow the WHO recommendation on vaccinating pregnant women with TTCV. Seven countries have reported >80% coverage with two or more doses of TTCV in pregnant women (TT2+) for several years (source: WHO/UNICEF Joint Reporting Form - JRF).

Lower coverage does not necessarily indicate weak programme performance; as WRA accumulate repeated vaccine doses during multiple pregnancies and supplementary immunization, they become non-eligible during future pregnancies while still contributing to the target denominator. Various field surveys during validation exercises indicated much higher protection at birth than reported TT2+ coverage suggests.

Infant immunization against tetanus (DTP and Penta vaccines) rose from 56% in 2000 to 88% in 2017 (source: JRF). Several countries have booster doses in early childhood or integrated TTCV vaccination into their school health programmes. National immunization programmes also provide a combination of tetanus and diphtheria toxoid as late childhood booster doses and/or for pregnant women, for further benefits.

In 1988, countries in the Region reported almost 15,000 NT cases but this number was estimated to probably only represent about 10% of the occurring cases as the majority of NT cases did not get reported. As a result of immunization efforts and improved NT surveillance, often integrated with other vaccine-preventable disease (VPD) surveillance, 399 NT cases were reported in 2016 and 443 in 2017; from six countries. None of the countries exceeded the "elimination" definition of <1 NT case per 1,000 live births in each district (3rd administrative level of a country).

The total number of tetanus cases reported was 5,771 and 6,829 in 2016 and 2017, respectively.

A district level risk assessment to monitor MNTE was conducted in Timor-Leste. Findings from the data review and field assessments in the two lower performing municipalities are compatible with sustaining MNT elimination and, by extension, in the whole of Timor-Leste. To support countries in this activity, the WHO is currently updating its operational guidelines, which were field tested in Timor-Leste.

KEY CHALLENGES:

- → Maintaining MNT elimination status is challenging throughout the Region due to (a) the existence of areas of low immunization coverage, (b) the occurrence of a significant number of births without skilled attendants and (c) an inadequate focus on NT surveillance.
- → In areas with suboptimal antenatal care, the protection of pregnant women against tetanus has not been fully achieved. Providing an adequate number of booster doses of tetanus vaccine is still demanding for some NIPs.
- → Better overall maternal and neonatal care requires access to SBAs and clean delivery and cord care practices, both out of the direct control of the immunization programme.
- → Despite improvements, it can be challenging to assess the quality of NT surveillance and NT cases may still occur unreported, and therefore difficult to monitor elimination status and identify areas where MNT is still occurring.

GOAL 5: CONTROL OF JAPANESE ENCEPHALITIS IS ACCELERATED

BACKGROUND

Currently, 10 out of 11 countries in the SEA Region are endemic for JE (all SEAR countries except Maldives). In the mid-1980s, the disease was reported in Sri Lanka and Thailand predominantly as outbreaks. Both countries introduced mouse-brain-derived inactivated JE vaccines (MBDJEV) in high-risk areas in the late 1980s, and noted a significant reduction in the number of disease outbreaks and cases. Subsequently, both countries added JE vaccine to the national childhood immunization schedule to expand access to all children, nationwide. Large outbreaks were reported in India and Nepal, and JE vaccine was introduced in high-risk areas as a control strategy with newly-developed live-attenuated JE vaccine (LJEV) in in 2005 and 2006 respectively. In 2009, Sri Lanka shifted from MBDJEV to LJEV. Thailand is currently replacing the MBJEV with the LJEV.

With the introduction of the JE vaccine, either nationwide or in selected high-risk areas as SIAs followed by routinely for infants, JE is under control in Sri Lanka and Thailand and the incidence is gradually declining in Nepal. In these countries, the disease appears only sporadically, with small outbreaks occurring among unvaccinated adults.

In India, despite SIAs in 204 high-risk districts and the inclusion of JE vaccine for infants in the NIP for almost a decade, certain states still experience seasonal outbreaks, perhaps due to low immunization coverage. Since the disease is reported in significant numbers among unvaccinated adults, several sates in India have now expanded JE vaccination to include adults.

ACHIEVEMENTS/PROGRESS:

Develop and sustain AES surveillance through integrated national surveillance system or sentinel surveillance in endemic countries:

DPR Korea, Myanmar, Nepal, Sri Lanka, Thailand and Timor-Leste have national surveillance for JE. India and Indonesia have extensive sentinel surveillance network. Bangladesh plans to start national surveillance. In 2017, a total of 2 634 AES cases, including laboratory confirmed JE, were reported in the SEA Region.

Table 5: Number of JE cases reported by each country from 2006 to 2017

COUNTRY	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		
											Tested	Positive	Confirmed
Bangladesh	204	702	15	15	103	52	23	183	76	42	618	19	19
Bhutan			0	0	3	27	0	2	5	5	112	0	3
DPR Korea	0	124	10		0	0	0	0	0	0	0	0	0
India	4 017	427	653	555	1 214		1 078	1 657	1 620*	1 627*			2 043*
Indonesia								72	39	43	281	6	6
Maldives			0	0	0	0	0	0	0	0	0	0	0
Myanmar	28	5	8	18	20	14	3	50	113	393	2 264	442	442
Nepal	435	329	146	183	126	75	118	1 304	937	98	1 155	63	63
Sri Lanka	45	118	72	27	30	60	70	21	17	20	274	23	23
Thailand	43	64	36	40	52	54	59	31	23	21	254	28	28
Timor-Leste	0	0	3	0	0	0	5	0	0	1	38	1	7
SEAR	**4 772**	**1 769**	**943**	**838**	**1 548**	**282**	**1 356**	**3 217**	**2830**	**2 250**	4 996	592	**2 634**

Source: WHO/UNICEF joint reporting forms from member countries

*Provisional data to be confirmed

Developing accredited national laboratories in endemic countries:

There are 14 laboratories in the SEA region. In 2017, 10 laboratories were accredited. They are in India: (four laboratories - Bangalore, Burdwan, Chennai, Dibrugarh), Bhutan (RCDC, Thimphu), Indonesia (NIHRD, Jakarta), Myanmar (NHL, Yangon), Nepal (NPHL, Kathmandu), Sri Lanka (MRI, Colombo), and Thailand (NIH, Nonthaburi). Four laboratories are provisionally accredited. They are two in India (Bellary and Madurai) and one each in Bangladesh (IEDCR, Dhaka) and Timor-Leste (NHL, Dili). They will be reviewed in 2018.

Analysing the disease burden for JE and risk factors for transmission of the disease:

India, Nepal, Sri Lanka and Thailand have analysed risk factors and initiated vaccination programmes. Following comprehensive analysis of national data, Myanmar conducted JE immunization campaign for children 9 months-15 years in November/December 2017, followed by nationwide introduction of JE vaccination in January 2018. Based on the disease burden, Indonesia introduced JE vaccination in one province.

Achieve more than 90% coverage in all existing JE immunization programmes in countries and introduce JE vaccination through routine immunization in countries with demonstrated JE risk:

Table 5: Number of JE cases reported by each country from 2006 to 2017

COUNTRY	JE IMMUNIZATION PROGRAM	AGE OF IMMUNIZATION	VACCINE USED IN NATIONAL PROGRAM	TARGET 2017	NUMBER VACCINATED 2017	COVERAGE 2017	COUNTRY OFFICIAL ESTIMATE 2017
India	In 229 endemic districts (out of 676 districts)	9-12 months 16-24 Months	CD-JEV	10, 208, 186	9, 557, 477	94%	94%
Indonesia	commenced in Bali in May 2018	12 months	CD-JEV				
Myanmar	Commenced nationally in Jan 2018	9 months	CD-JEV				

Nepal	National	12 months	CD-JEV	626, 022	420, 494	67%	71%
Sri Lanka	National	12 months	CD-JEV	327, 542	314,178	96%	99%
Thailand	National	12 months	CD-JEV, JE-CV	466, 272	447, 855	96%	92%

Abbreviations: CD-JEV = live attenuated JE vaccine; JE-CV = live recombinant JE vaccine; MB = inactivated, mouse brain-derived JE vaccine; VC= inactivated, Vero cell culture-derived JE vaccine. ±± DPR Korea conducted a JE vaccination campaign in 2016.

Conducting wide age rage immunization campaigns based on the disease burden:

Nepal has conducted JE immunization campaigns for children 9 months-15 years in several phases. Similarly, India conducted SIAs targeting children 9 months-15 years in 216 endemic districts. Myanmar conducted national campaign targeting 13,605,174 children 9 months-15 years in November and December 2017 and achieved 92.5% coverage. In Bali island in Indonesia supplementary immunization campaign was conducted in March/April 2018 and 964,011 children 9 months-15 year were vaccinated. The Democratic People's Republic of Korea identified high-risk provinces and conducted SIAs with JE vaccine in those areas in 2009/2010 and in 2014. The country has not yet included the JE vaccine in their routine immunization programme.

Creating partnership for advocacy and resource mobilization of JE Control:

PATH, WHO, CDC and UNICEF supported governments of India and Nepal in AES surveillance and JE vaccine introduction. Gavi has opened the funding opportunity for JE supplementary immunization campaigns. Gavi supported expansion of JE vaccination in Nepal and supported the national JE campaign in Myanmar.

KEY CHALLENGES:

- → JE/AES surveillance and laboratory confirmation of JE cases is sub-optimal in all JE-endemic countries in the SEA Region. JE sentinel surveillance is carried out in some countries by WHO-supported surveillance systems.
- → In countries with limited primary health care facilities and insufficient laboratory support, a large number of non-JE cases and deaths are labelled and reported as JE/AES cases.
- → JE-endemic countries that have not had outbreaks find it difficult to prioritize JE vaccine introduction given other priority vaccine-preventable diseases.
- → Countries such as the Bhutan and Indonesia which are potentially endemic for JE have lost the opportunity to obtain Gavi support for JE vaccine introduction because their economic status, which means that they are no longer eligible or are becoming ineligible for Gavi support. If JE disease burden is not assessed and vaccination programmes initiated as appropriate, Bangladesh and the Democratic People's Republic of Korea will also miss the opportunity for Gavi support for JE vaccine introduction.

GOAL 6: CONTROL OF JAPANESE ENCEPHALITIS IS ACCELERATED

BACKGROUND

In 2015, the prevalence of chronic hepatitis B in the SEAR was estimated to range between 3-5% depending on the sources. Subsequently, WHO estimated that there are approximately 100 million persons with chronic hepatitis B virus (HBV) infection (~5%) resulting in an estimated 300,000 deaths as a result of its consequences such as liver cirrhosis and hepatocellular cancer each year across the region. The prevalence of chronic hepatitis B infection varies by country and target population. In addition, intra-country variability of infection rates has also been observed.

In 2016, the SEAR ITAG recommended a Regional goal of reaching a ≤1% prevalence of hepatitis B surface antigen (HBsAg) among 5-year-old children in 2020; in line with the Global Health Sector Strategy on Viral Hepatitis (GHSSVH).

ACHIEVEMENTS

In 2017, all 11 countries in SEAR had HepB in their routine immunization schedules as part of combination vaccines, and eight countries (Bhutan, DPR Korea, India, Indonesia, Maldives, Myanmar, Thailand, Timor-Leste) had introduced a universal HepB birth dose (HepB-BD) (WHO Monitoring System 2017).

The overall HepB3 coverage in the Region increased from 53% in 2010 to 88% in 2017 (Source: calculated on country official estimates in JRF 2017). Although HepB3 coverage is reported to be ≥90% in seven countries, it does not yet reach these levels in India (88%) and Indonesia (85%) which account for the largest births cohorts in the Region as well as in Myanmar (89%) and Timor-Leste (81%). Among the eight countries that included HepB-BD in their vaccination schedule in 2017, coverage was >90% in four (Bhutan, DPR Korea, Maldives and Thailand). India which contributes 70% of the births annually in the Region reported a timely HepB-BD coverage of 53%. Indonesia reported a total HepB BD coverage of 86%. No relevant coverage figures were yet available for Myanmar due to the recent introduction.

Nationally representative serosurveys among children at least five years of age to estimate post-vaccination esti-

mates are available in Bangladesh, Bhutan, Nepal and Thailand. In India, there are a number of studies, but they all focused on one area or state. In Nepal, subnational studies have shown geographic variability in HBV surface antigen (HBsAg) prevalence. The DPR Korea is planning to conduct a national household-based survey among children aged over five years and Maldives is planning a national school-based survey among Grade 1 children. Timor-Leste has no serosurvey data and IVD SEARO is assessing the feasibility of a combined lymphatic filariasis and hepatitis B serosurvey in the coming years.

Several countries have sustained high HepB BD and HepB3 coverage for at least five years and likely achieved the target of reducing chronic hepatitis B prevalence to less than 1% among children. IVD SEARO is currently developing the mechanism for verifying countries' attainment of the target. The main evidence for verification would include a nationally representative serosurvey to measure the prevalence of chronic hepatitis B among children at least five years of age born after vaccine introduction with adequate precision, and high sustained HepB coverage. It is proposed that upon countries' request for verification, a respective committee composed of three independent experts including one committee chair will be appointed by SEARO. The committee will review the evidence submitted by the country, request additional information or clarifications from the country as needed, and make a recommendation to SEARO on whether the target has been achieved. IVD SEARO would support countries conducting serosurveys, assemble the documents and information needed for verification, and facilitate the verification process. Countries' achievements of the target will be publicly recognized.

KEY CHALLENGES:

→ Countries lacking prevalence and surveillance data on hepatitis B may have difficulties in prioritizing its control and marshalling sufficient political and financial support.

→ High immunization coverage for HepB BD has not been attainable in countries where home births and unskilled birth attendance are the norm.

→ Monitoring private-sector immunization with HepB BD requires new systems for communication and data sharing between private providers and the government.

GOAL 7: INTRODUCTION OF NEW VACCINES AND RELATED TECHNOLOGIES ACCELERATED

BACKGROUND

New and increasingly sophisticated vaccines have become available in the last decade for diseases that have not traditionally been targeted by national immunization programmes.

In the process of a new vaccine introduction specific activities that are considered include integrating surveillance of the disease targeted with a new vaccine with national surveillance or establishing sentinel surveillance, analysing disease burden, involvement of national technical advisory group decision taking, conducting cost effectiveness of the introduction, review the sustainability, develop comprehensive plans based on the experiences of previous new vaccine introduction, monitoring after introduction and conducting post introduction evaluations. Priority vaccines for the consideration based on the disease burden of the countries were PCV, HPV, JE vaccine and rotavirus vaccine.

The target under this goal of the SEARVAP is for each country to introduce at least two additional new/underutilized vaccines between 2016 and 2020.

Table 7: Introduction of new and underutilized vaccines in SEA Region, 2016-2018

COUNTRY	NATIONAL	SUB-NATIONAL	PLANNED INTRODUCTIONS
Bangladesh		HPV vaccine (1 district)	Rotavirus vaccine (2018)
Bhutan	MMR		
India	MR	Rotavirus vaccine (11 states) PCV (5 states) HPV (2 districts),	
Indonesia	IPV, MR	HPV (1 province and 4 districts), PCV (2 districts), JE (1 province)	
Myanmar	PVC, JE		
Nepal		HPV (1 district)	Rotavirus vaccine (2018)
Sri Lanka	HPV		
Thailand	HPV		Rotavirus vaccine (2019)
Timor-Leste	IPV		

ACHIEVEMENTS/PROGRESS

All Gavi-eligible countries have added three or more new vaccines to the national immunization schedule during the last decade, and have strengthened their NIPs in the process. Even countries in the SEA Region not eligible for funding from Gavi, such as Maldives and Thailand, have introduced new vaccines.

All countries in the SEA Region have introduced HepB-containing vaccines in the national immunization schedule, and seven countries (Bhutan, the Democratic People's Republic of Korea, India, Indonesia, Maldives, Thailand and Timor-Leste) have introduced HepB birth dose as well. All countries in the Region, except Thailand, have introduced Haemophilus influenza b vaccine (Hib) in a pentavalent formulation.

In SEAR, Bhutan has nationally introduced the HPV vaccine in 2008. Sri Lanka and Thailand have introduced HPV vaccine, nationwide in 2017. Nepal and Bangladesh have successfully completed demonstration project with Gavi support in one district each and are now planning to submit the application to Gavi in September 2018 for national introduction. Myanmar is also planning to submit the application to Gavi in September 2018 for national introduction of HPV. Bangladesh, Nepal, Myanmar and five states of India have introduced pneumococcal conjugate vaccine (PCV). Indonesia has introduced PCV in two districts. India has initiated the phased introduction of indigenous Rotavirus Vaccine (RV) and has introduced the vaccine in 11 states. Bangladesh and Nepal will introduce RV, nationwide, with Gavi support in 2018. Myanmar has also submitted the application for RV to Gavi. Thailand conducted a pilot project of RV introduction in one province and plans for national introduction in 2019. As a part of the polio eradication end-game strategy, all SEA Region countries have introduced IPV and switched from trivalent OPV (tOPV) to bivalent OPV (bOPV) in their national immunization schedules. All SEAR countries, except DPR Korea, are providing rubella-containing vaccine in their national immunization programme.

There are sentinel surveillance sites in countries for invasive bacterial disease and rotavirus surveillance. Data obtained from these sites have allowed the introduction of PCV in Bangladesh, India, Nepal and Myanmar and the introduction of rotavirus vaccine in India.

Bangladesh, India and Sri Lanka responded to address issues of IPV shortages by shifting to intradermal (one-fifth of a full dose) of IPV. Nepal is preparing to introduce intradermal IPV in the programme very soon.

KEY CHALLENGES:

- Several countries in the SEA Region have delayed or declined the introduction of one or more new vaccines because of questions regarding the long-term sustainability of maintaining the new vaccine in the national immunization schedule given the implications of this for the national budget. Even countries eligible for Gavi support for at least five years following the introduction of some new vaccines had difficulties to justify the costs associated with these vaccines. These countries are missing out on the opportunity to add new antigens to their national immunization schedules.
- Some countries lack reliable disease burden information on which evidence-based decisions can be made to introduce a new vaccine. Countries need to strengthen their vaccine-preventable disease surveillance and make special efforts to generate disease burden information.
- Despite demonstrated disease burden, policy makers would like to know the economic benefits and cost effectiveness of a new vaccine before deciding to include the vaccine in the national immunization schedule; this is particularly the case when there are competing demands for funding of public health programmes in the country.
- Multiple preparations of HPV (bi valent, quadrivalent and nonavalent), PCV (10 and 13), Rota (RV1 and RV5) necessitates careful planning and advocacy with stakeholders to decide vaccine preparation that must be used.

GOAL 8: INTRODUCTION OF NEW VACCINES AND RELATED TECHNOLOGIES ACCELERATED

BACKGROUND

Recognizing that access to affordable vaccines of assured quality is central to the performance of immunization programmes, the South-East Asia Regional Vaccine Action Plan 2016-2020 has identified ensuring access to high-quality vaccine as one of the eight goals.

Vaccine development and production capacity in the Region is growing and playing an increasingly positive role both at regional and global levels. Three of the 11 countries of the SEA Region are WHO prequalified (PQ) vaccine-producing nations, representing a significant supply to the global market. Bangladesh has established significant vaccine manufacturing capacity, and is currently positioned to manufacture cholera vaccine for the UN, which could help address a global shortage situation and needs to be assessed on its functionality of the regulatory authority.

The key strategy to ensure access to high-quality vaccines is by enhancing regional cooperation through the expansion of centers of excellence e.g.: WHO-GLO and Collaborative Centers (CC) to provide training and technical support to countries in the Region in the areas

of vaccine regulatory and immunization supply chain management. In March 2018, the 2nd South-East Asia Regulatory Network meeting was conducted in Sri Lanka to promote regional cooperation in the areas of medicine and vaccine regulation.

There is a strong need in the Region to invest in research, development and manufacturing techniques to identify best ways to access appropriate technology and expertise, to manage intellectual property rights and to develop thermostable and suitable products as well as new bioprocessing and manufacturing technologies. Governments can promote an enabling environment for national regulatory authorities and manufacturers by communicating regularly and working in partnership with researchers, biotech companies and universities to develop new vaccines and technologies.

ACHIEVEMENTS/PROGRESS

SEARO played a pivotal role to facilitate coordinated procurement actions when surge of vaccine demands arose for outbreak responses and to implement SIAs with large target population over a short period of time in 2016-2017. The collaboration of WHO with Ministry of Health, UNICEF and manufacturers enabled the delivery of Diphtheria Antitoxin (DAT) and diphtheria-containing vaccines to respond to outbreaks in Bangladesh and Indonesia in 2016-2017 with minimal disruptions of global supplies. Similar collaboration to coordinate supply was established for MR vaccine supply even though large countries including India and Indonesia conducted SIAs simultaneously.

The need for collaboration is further illustrated by the ASEAN Members including Indonesia, Myanmar and Thailand from SEA region and another seven members from the Western Pacific region of WHO. WHO SEARO supported an initiative that had the ASEAN countries getting together to include ASEAN Vaccine Security and Self-Reliance (AVSSR) in the ASEAN Health Development Plan and to establish the AVSSR working group with Immunization programme managers, regulatory experts, R&D Institutions and experts in vaccine production and procurement for public sectors. The AVSSR is an example of a regional platform to share products, procurement and price information among ASEAN members and to move towards a coordinated vaccine procurement, providing manufacturers with long-term visibility on demand and emerging requirements, and providing countries with greater negotiation power due to greater volumes of vaccines.

GAVI countries with HSS and cold chain equipment optimization (CCEOP) grants have invested in strengthening existing vaccine cold chain systems. Countries have reported progress in procuring cold chain equipment, though limited progress is reported for development of infrastructure and HR capacity development. Reliance on regional network of local institutions and experts was successful in SEA Region, especially to implement vaccine NRA capacity building activities.

The uptake of seasonal vaccine has increased globally. In SEA Region, the uptake of seasonal influenza increased 6 folds in the last 10 years, representing the greatest increase among all WHO regions. The capacity for producing pandemic vaccine has greatly increase in SEA Region with two manufacturers (one each in India

and Thailand) acquiring technology for its production. The Region is producing 231.5 million doses – an 11-fold increase in production capacity - the highest among all Regions.

The Region continues to provide technical support for National Regulatory Authority (NRA) systems strengthening. Formal benchmarking assessments have been recently conducted in Thailand (June 2018) and in Indonesia (July 2018). These two countries are producers of WHO pre-qualified (PQ) vaccines. Indonesia account for a large source of multiple WHO PQ vaccines and Thailand produces WHO PQ JE vaccine and a seasonal influenza vaccine with capacity to produce pandemic vaccine. Technical support has been provided to Sri Lanka National Medicine Regulatory Authority (NMRA) to conduct self-benchmarking and plans are in place to provide technical support to DPRK to train NRA staff on the use of the Global Benchmarking Tool (GBT) followed be a feasibility assessment for resumption of production of vaccine and medicines.

The Region is coordinating the development of a bi-lateral cooperation agreement between Indonesia NRA and Nepal NRA to build capacity of NRA Nepal to implement Quality Management System and to strengthen licensing and pharmacovigilance.

The introduction of underused and new vaccines and the growing vaccine industry in the Region provides an opportunity to strengthen routine reporting and analysis of cases of adverse events following immunization (AEFI) and to establish sentinel surveillance systems for post-marketing studies.

KEY CHALLENGES

- With new and more complex technologies being used to manufacture vaccines, it has become increasingly complicated, costly and time-consuming to maintain an enabling environment for manufacturers, challenging to advocate with manufacturers to maintain production of traditional vaccines and to ensure that NRAs remain fully functional.
- In low- and middle-income countries, NRAs have limited access to domestic funding to meet the regulatory requirements of ever more sophisticated products and technologies developed by the manufacturers.
- Countries that do not rely on UNICEF for group procurement lack sufficient vaccine price transparency, procurement expertise or bargaining power to purchase vaccines. Alleviating these challenges will require more active global support.
- Sustaining financing for vaccines and immunization is always difficult in the face of competing demands and the need to respond to outbreaks and emerging or re-emerging pathogens.

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Progress Report for the Western Pacific Region

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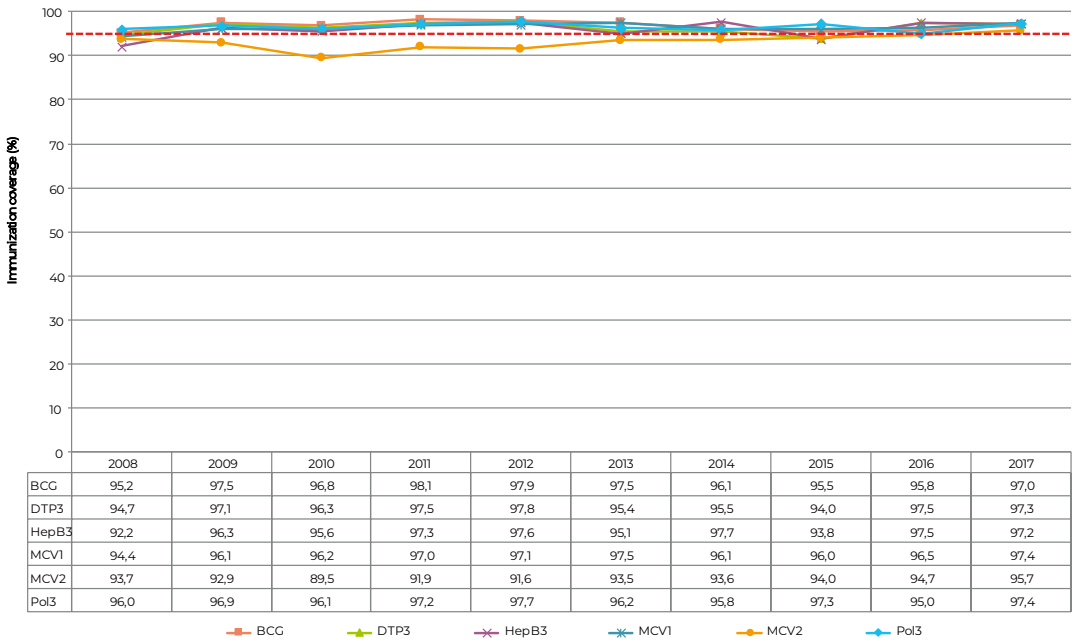
1. BACKGROUND

The Regional Framework (RF) for Implementation of the Global Vaccine Action Plan (GVAP) in the Western Pacific was endorsed in 2014 by the 65th Regional Committee (WPR/RC65.R5). This framework has been developed to translate strategies and activities recommended by the GVAP into the context of the Western Pacific Region (WPR) and to incorporate all global and region specific immunization goals, including: 1) sustaining polio-free status; 2) maternal and neonatal tetanus (MNT) elimination; 3) measles elimination; 4) accelerated control of hepatitis B; 5) rubella elimination; 6) accelerated control of Japanese Encephalitis (JE); 7) meeting regional vaccination targets; and 8) introduction of new vaccines. Since adoption of this framework by all Member States in 2014, the Region has been making steady progress towards achieving the aforementioned goals. (Annex 1)

From 2014 to 2016, the WPR has made considerable strides towards achieving many of the goals in the RF and GVAP. All diseases under the accelerated disease control programmes are progressing well; with the Region maintaining its polio-free status, MNT elimination having been achieved in all countries except Papua New Guinea, rubella elimination remaining on track and tremendous strides in the accelerated control of hepatitis B meeting regional targets ahead of schedule. Further, The WPR is on track with new vaccine introduction overall. All 36 countries introduced Rubella Containing Vaccine (RCV) during this period. JE vaccine was introduced in three of the four JE-endemic Gavi, the Vaccine Alliance (Gavi) eligible countries.

As a whole, the Region has improved and maintained high coverage of DTP and measles containing vaccines since 2008. (Figure 1) This is an indicator of public demand and acceptance on vaccines and immunization, while also an evidence of improved immunization service delivery in countries.

Figure 1: Reported immunization coverage, Western Pacific Region, 2008-2017



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
BCG	95,2	97,5	96,8	98,1	97,9	97,5	96,1	95,5	95,8	97,0
DTP3	94,7	97,1	96,3	97,5	97,8	95,4	95,5	94,0	97,5	97,3
HepB3	92,2	96,3	95,6	97,3	97,6	95,1	97,7	93,8	97,5	97,2
MCV1	94,4	96,1	96,2	97,0	97,1	97,5	96,1	96,0	96,5	97,4
MCV2	93,7	92,9	89,5	91,9	91,6	93,5	93,6	94,0	94,7	95,7
Pol3	96,0	96,9	96,1	97,2	97,7	96,2	95,8	97,3	95,0	97,4

However, population immunity gaps caused by uneven immunization coverages particularly at subnational levels are major concerns shared by countries, WHO and partners. With the support of partners, WHO was embracing the principles and strategies as outlined in the Global Routine Immunization Strategies and Practice (GRISP) while innovative methods were also being developed to reach the unreached and to maintain public trust and demand at higher levels. Countries immunization programmes from 2008-2017 have been further strengthened, including disease/laboratory surveillance and outbreak preparedness and response. Reported outbreaks of vaccine-derived poliomyelitis and measles were able to be effectively and efficiently contained. Vaccine safety has been ensured and concerns have being addressed through strengthening vaccine regulatory functions, including vaccine pharmacovigilance at country levels. Continued political commitments and donor support are visible throughout the Region. These efforts have contributed tremendously to sustain the programmatic progress achieved throughout the Region.

This report summarizes the progress towards global and regional immunization goals from 2017 to mid-2018. Annex 2 highlights the progress towards the 12 recommendations made by the Strategic Advisory Group of Experts on Immunization (SAGE) in the 2017 mid-term review of the GVAP.

2. PROGRESS TOWARDS REGIONAL IMMUNIZATION GOALS

The WPR has made considerable strides and is on track to achieving many of the regional immunization goals described below.

2.1 Sustaining polio free status

PROGRESS AND ACHIEVEMENTS

Overall, population immunity against poliovirus in the Region is quite high, with a majority of countries officially reported more than 90% coverage with three doses of polio vaccines in 2016. Performance of surveillance for polioviruses in the Region is well above regional thresholds for the main indicators of Polio Global Eradication Initiative (non-polio AFP rate at two cases per 100,000 under 15 population, 90% adequate stool specimens collection rate and 98% AFP cases investigated within 48 hours of notification).

In 2015, 15 out of 17 eligible countries in the WPR have introduced at least one dose of IPV into their national immunization schedules. Due to global supply shortage, Mongolia and Viet Nam did not introduce IPV in 2015-2017, but are scheduled to introduce IPV in the second half of 2018.

A high-quality polio laboratory network has been maintained throughout the years and in 2017, 41 out of 43 network laboratories have capacity for intratypic differentiation of poliovirus. In this Region, five countries (Australia, China, Japan, Republic of Korea and Viet Nam) have designated poliovirus-essential facilities for handling and storing wild poliovirus type 2, vaccine-derived poliovirus type 2 and Sabin/oral polio vaccine type 2 materials in national polio laboratories, research and diagnostic facilities and vaccine manufacturers.

2.1.1 Remaining/emerging challenges

Overall, good surveillance and laboratory performance have unfortunately not been universal and vary across the Region, with challenges requiring further attention.

Gaps in immunity against poliovirus existed at national and sub-national levels in 2017, with six countries and areas (Guam, Kiribati, Lao People's Democratic Republic, Samoa, Solomon Islands, and Vanuatu) reporting 80% to 90% three dose coverage levels, and four countries and areas (Federated States of Micronesia, Marshall Islands, Norther Mariana Islands, Papua New Guinea) with less than 80% three dose coverage levels. Due to the global supply shortage of IPV, Mongolia and Viet Nam have regrettably accumulated more than four million children susceptible to clinical type 2 polio.

In 2017, the Regional Commission for Certification of Poliomyelitis Eradication in the WPR classified three countries (i.e. Cambodia, Lao People's Democratic Republic and Mongolia) as medium risk and two countries (i.e. Papua New Guinea and the Philippines) as high risk for poliovirus spreading from importation.

Expansion of environmental surveillance (ES) for polio-viruses is ongoing in the Region, requiring additional human and financial resources. Countries that have designated polio-essential facilities are experiencing delays in nomination of members of National authority for containment due to several reasons, including inadequate human resources and lack of supportive legislations, thus affecting the containment certification process.

The polio transition in the WPR will largely affect countries (Cambodia, China, Lao People's Democratic Republic, Mongolia, Pacific Island Countries, Papua New Guinea, the Philippines and Viet Nam) which are currently benefiting from direct technical and financial support from WHO and other partners. As Global Polio Eradication Initiative funding is being scaled down, provision of WHO's support to affected Member States in maintaining polio essential functions may be affectedin 2019 and beyond.

Photo: Deputy Minister of Health Dr Phouthone Muongpak, Lao People's Democratic Republic officiated the Polio SIA review meeting in 2018
(Source: WHO, Country Office, Lao PDR)

2.1.2 Responses and support to be provided by WHO

The WHO will continue supporting Member States of the WPR with financial and technical resources in building national capacity and achieving financial sustainability for maintaining polio essential functions; reviewing performance of AFP surveillance and providing recommendations on further improvements; conducting annual polio risk assessment to inform planning and resource allocation activities; conducting necessary trainings and increasing awareness and sharing relevant information; strengthening laboratory capacity for intratypic differentiation of poliovirus and timely confirmation of results and referral of samples for further characterization; and implementing polio laboratory containment and certification processes.

Due consideration should be given to continuing efforts in preparation for polio transition and increasing ownership of polio essential functions, including: analysing cost of maintenance of polio essential functions; and increasing domestic funding for maintenance of polio essential functions if necessary.

2.2 Maternal and neonatal tetanus elimination

PROGRESS AND ACHIEVEMENTS

In November 2017, the Philippines achieved maternal and neonatal tetanus (MNT) elimination. Although 16 of 17 regions of the Philippines were validated to have achieved MNT elimination in February 2015, the Autonomous Region of Muslim Mindanao (ARMM) was not included due to security concerns. Following the recommendations from WHO-UNICEF, three successful rounds of tetanus diphtheria toxoid supplementary immunization activities (SIAs) were conducted, achieving >80% coverage during each round. The validation assessment for ARRM was concluded in 2017, confirming attainment of MNT elimination in the Philippines.

By the end of 2017, Papua New Guinea remains the sole country in the Region yet to achieve MNT elimination. The country is conducting tetanus toxoid (TT) SIAs in identified high and medium risk provinces. As of March 2018, there has been gradual progress conducting TT SIA in three high risk provinces. However, this progress has been hindered by various issues, including delay in the cold chain equipment procurement and distribution, change in the governance and leadership, mobilizing funds and inadequate staffing.

2.2.1 Remaining/emerging challenges

Achieving MNT elimination in Papua New Guinea has been hindered by various issues including delays in the cold chain equipment procurement and distribution, changes in governance and leadership, mobilizing funds and inadequate staffing.

Other regional challenges and concerns include sustaining MNT elimination in countries that have achieved elimination, equity concerns as the diseases is a marker for socioeconomic inequity and insufficient booster doses in national immunization schedules.

2.2.2 Responses and support to be provided by WHO

WHO along with partners will provide to Papua New Guinea necessary and requested technical and financial support to achieve MNT elimination as early as possible and to ensure the Region can collectively reach the global MNT elimination target by 2020. Effort will be required to provide support to countries that have achieved elimination by implementing strategies aligned with the draft "Implementation Guide for Sustaining Maternal & Neonatal Tetanus Elimination". Key strategies will include: strengthening routine immunization including three booster doses; strengthening MNT surveillance; antenatal screening of pregnant women for tetanus vaccination; and increasing access to skilled attendants at birth and clean delivery/cord care practices through collaboration with maternal and child health services. Providing support to countries that have not introduced three booster doses is consistent with WHO recommendations.

2.3 Measles elimination

PROGRESS AND ACHIEVEMENTS

As of September 2018, eight countries and areas [Australia, Brunei Darussalam, Cambodia, Hong Kong SAR (China), Japan, Macao SAR (China), New Zealand and Republic of Korea] have been verified as having eliminated (or interrupted endemic transmission of) measles.

Four countries (Cambodia, Fiji, Lao People's Democratic Republic and Papua New Guinea) conducted supplementary immunization activities with WHO support, using Measles Rubella (MR) vaccine.

Measles incidence in 2017 was 5.2 cases per million, the lowest reported incidence of measles to date. In 2017, there were no prolonged or nationwide outbreaks in any country or area in the Region.

2.3.1 Remaining/emerging challenges

During the region-wide measles resurgence in 2013 to 2016, the following new challenges were identified in countries experiencing massive resurgences of endemic measles virus transmission or nation-wide, large scale outbreaks after importation from endemic countries: (i) increased measles virus transmission among adolescent and young adults not targeted by the present immunization strategy and among infant too young to be vaccinated (e.g. <9 months of age); (ii) measles epidemiology has become more diverse within countries with large population; (iii) delayed and improper outbreak response; (iv) serious nosocomial transmission; (v) surveillance and laboratory activities lacking resilience during outbreaks in some countries; and (vi) insufficient involvement, partnership and collaboration of communities and other ministries, sectors and partners in several countries.

Photo: Countries conducting Measles Rubella (MR) vaccine SIA with WHO support (Source: EPI/WPRO)

2.3.2 Responses and support to be provided by WHO

Reviews on vaccine-preventable diseases surveillance including measles surveillance were carried out in the Philippines (2016) and Viet Nam (2017) with international partners. The Regional Strategy and Plan of Action for Measles and Rubella Elimination was endorsed by the Regional Committee in 2017. Guided by this strategic document, Mongolia and Viet Nam are developing a new national measles and rubella strategy and plan of action with technical support provided by WHO. WHO supported Cambodia and Lao People's Democratic Republic in developing final drafts of their plans which are pending final government approval. WHO supported Papua New Guinea in developing an immunization response plan and in obtaining emergency funding for vaccine and operational costs following an outbreak of measles. This work followed a series of large earthquakes that caused significant population displacement of measles-susceptible individuals.

In response to Technical Advisory Group's (TAG) recommendations in 2017, WHO has begun development of draft guidelines for measles and rubella outbreak preparation and response. These will be presented to the 2019 TAG for review and comment.

WHO continues to work with other international partners in supporting countries to develop and implement new national strategies and plans of action for measles and rubella elimination to address emerging challenges.

2.4 Accelerated control of Hepatitis B

PROGRESS AND ACHIEVEMENTS

The 2017 regional sero-prevalence target of 1% among immunized cohorts of children at least five years of age was met and immunization programmes in this Region have averted an estimated seven million deaths and 37.6 million chronic hepatitis B cases among children born between 1990 and 2014. As of June 2018, 21 countries and areas have been verified as meeting the 2017 goal. An additional three countries have sero-survey evidence of meeting the <1% goal but have not been verified to date.

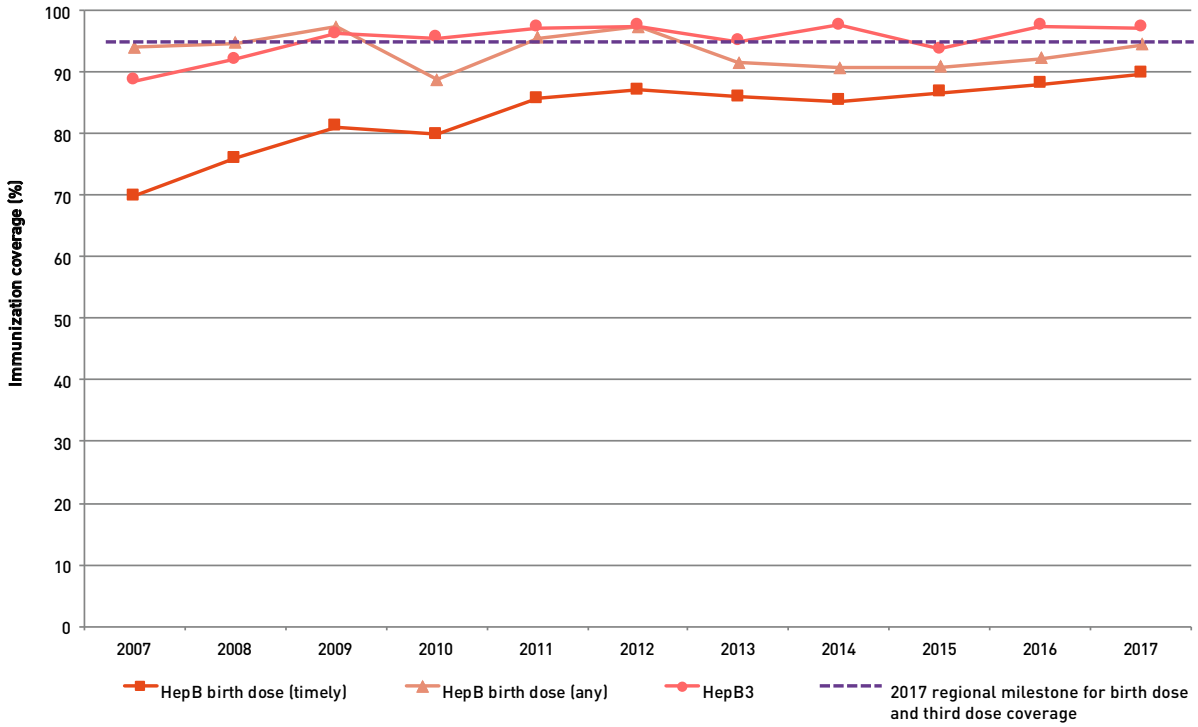
2.4.1 Remaining/ emerging challenges

Current challenges include: (i) increasing hepatitis B birth dose and third dose coverage in all countries and areas to over 95% by 2017; (ii) having countries use the hepatitis B vaccine outside the cold chain (OCC) where infrastructure and cold chain equipment are lacking and home deliveries are high; (iii) using innovative methods for serosurveillance among children in low prevalence settings; (iv) improving communication strategies; (v) strengthening laboratory networks to ensure nationally manufactured and imported lab tests are quality controlled and validated; and (vi) developing methods for countries to meet the global target of eliminating hepatitis B as a public health threat by reducing childhood prevalence to ≤0.1% by 2030.

2.4.2 Responses and support to be provided by WHO

From 2014-2017, Member States have focused on all the aforementioned challenges and progress has been achieved in the following areas: (i) increasing health facility deliveries and conducting national birth dose assessments to identify barriers to HepB-birth dose (Cambodia, Lao People's Democratic Republic, the Philippines and Viet Nam); (ii) increasing hepatitis B education during antenatal care (Kiribati), improving links with communities and outreach vaccination (Kiribati, Papua New Guinea and Viet Nam); and (iii) advocating the use of and national policy guidelines for hepatitis B vaccine OCC where needed (Kiribati and Solomon Islands).

Figure 2: Regional coverages for hepatitis B birth dose and third-dose, 2006 -2017



The Regional Office for the Western Pacific remains poised to assist countries with projects, serosurveys and direct assistance to help move countries towards improving hepatitis B control through immunization. The Fifth Hepatitis B Expert Resource Panel consultation in February 2017 has proposed new accelerated regional goals to reach the Global Health Sector Strategy for Viral Hepatitis goal of reducing HBsAg prevalence in 5-year-old children to 0.1% by 2030.

In addition, the Expanded Programme on Immunization (EPI) together with the Maternal, Newborn and Child Health (MNCH) programme and the HIV, Hepatitis and Sexually Transmitted Infections Units at the Regional Office for the Western Pacific developed a Framework for Triple Elimination of Mother-to-child Transmission of HIV, Hepatitis B and Syphilis in Asia and the Pacific 2018-2030 which was endorsed by all Member States in the Regional Committee in 2017. This framework proposes an integrated and coordinated approach to eliminate these three infections by using the common maternal, child and newborn health platform.

2.5 Rubella elimination

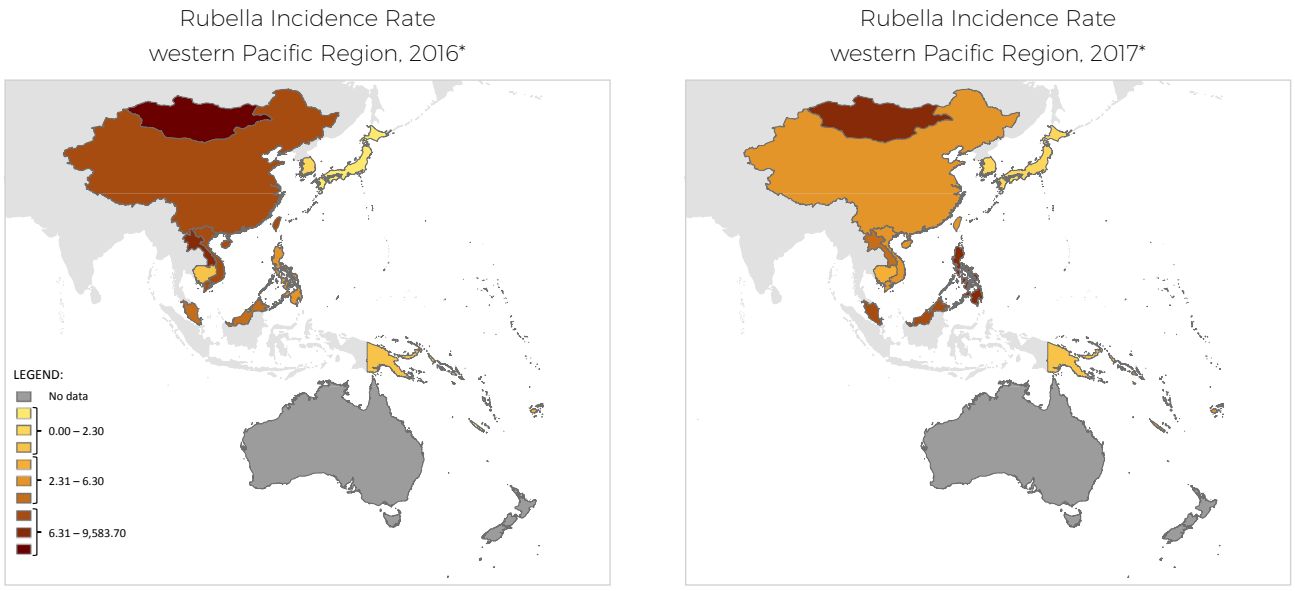
PROGRESS AND ACHIEVEMENTS

The 68th Regional Committee passed a resolution (WPR/RC68.R1) urging Member States to set a national target date for rubella elimination as soon as possible, and endorsing the newly developed Regional Strategy and Plan of Action for Measles and Rubella Elimination.

At the 5th Regional Verification Commission meeting in 2017, two countries (Republic of Korea and New Zealand) were the first to be verified as having eliminated rubella.

Rubella incidence in 2017 was 0.2 cases per million, the lowest reported incidence of rubella to date.

Figure 3: Rubella incidence rates are declining progressively in Western Pacific Region, 2016-2017



* Date not available for Chine
* Dots are placed at random within the corresponding provinces/districts, and might bot reflect the exact location of the case.
Source: National measles and rubella monthly reports
* Incidence rate is annualized as of Aug 20, 2017

2.5.1 Remaining/Emerging challenges

From 2014 to 2017, the proportion of adolescents and young adults aged 15-24 years affected by rubella infection has been significantly increasing in China, the Philippines and Viet Nam. As these birth cohorts are entering peak fertility years, this creates high risk for an increase in Congenital Rubella Syndrome (CRS) cases due to infection of pregnant women. Prevention of CRS is the most important reason for introduction of rubella-containing vaccine (RCV); elimination of rubella by interrupting circulation of endemic rubella virus remains the sole means to prevent all CRS cases.

2.5.2 Responses and support to be provided by WHO

All countries and areas in the WPR should urgently address immunity gaps among current adolescents and young adults while they are reachable for immunization. As urged by the Regional Committee in 2017 [WPR/RC68.R1], all countries and areas in the Region should set a regional target year for rubella elimination as soon as possible and develop and implement a national strategy and plan of action for rubella elimination, including establishment of national CRS surveillance, so as to benefit from increased political commitment, better coordinate effort between government sectors and mobilize resources by governments and partners.

WHO submitted to the 2016 TAG meeting, a draft new regional strategy and plan of action for purposes of supporting countries to: (i) set a national target year for rubella elimination; (ii) develop national strategies and plans of action for rubella elimination; and (iii) establish CRS surveillance. As recommended by the TAG in 2017, WHO is developing guidelines for CRS surveillance; a draft is scheduled to be presented to the TAG in 2018 for review and comment.

WHO will continue to work with other international partners in supporting countries to develop and implement national strategies and plans of action for rubella elimination, using the new regional strategy and plan of action for measles and rubella elimination in the Region.

2.6 Introduction of new vaccines

PROGRESS AND ACHIEVEMENTS

Just past the midpoint in the timeline, the WPR appears to be on track to achieving the RF objective for new vaccine introduction.

There are 18 middle-income countries in the WPR, 10 of which are lower middle income countries (LMICs) and eight of which are upper middle-income countries (UMICs); there are no low-income countries in the Region. Three of the middle-income countries (MICs) had introduced all four new vaccines [Hib vaccine, Human Papilloma Virus (HPV) vaccine, pneumococcal conjugate vaccine (PCV) and rotavirus vaccine] by 2010; 11 (73%) of the remaining 15 countries have introduced at least one new vaccine since 2010. Of the nine LMICs that had not introduced all four new vaccines by 2010, eight (89%) have introduced at least one new vaccine since 2010. Of six UMICs that had not introduced all four new vaccines by 2010, three (50%) introduced at least one new vaccine since 2010.

As of April 2018, Hib vaccine has been introduced into the national immunization programmes of 26 of the 27 countries in the Region (in three countries since 2010), and China is considering the vaccine introduction at national level in the near future. HPV vaccine has been introduced in six middle-income countries in the Region (in three countries since 2010). PCV has been introduced in 11 middle-income countries (in eight countries since 2010). Rotavirus vaccine has been introduced in five MICs (in two countries since 2010).

2.6.1 Remaining/emerging challenges

Challenges include: (i) the need to define strategies to support countries to achieve the new vaccines introduction goal (including engagement of experts in vaccine-preventable disease epidemiology and surveillance, economic evaluation of vaccines and other areas, as well as resources to support this engagement); (ii) the need to collect more comprehensive country-specific data on the burden of diseases targeted by new vaccines; and (iii) reduced support for new vaccine introductions now that almost all of the countries in the Region have or soon will be graduating from Gavi eligibility.

2.6.2 Responses and support to be provided by WHO

In September 2017, two countries (Lao People's Democratic Republic and Solomon Islands) successfully applied for Gavi support for both HPV vaccine and rotavirus vaccine introduction. Both countries plan to introduce rotavirus vaccine in 2019 and HPV vaccine in 2020. In addition, Mongolia is considering introducing HPV vaccine in 2020 and two countries (Cambodia and Papua New Guinea) have ongoing HPV vaccine demonstration projects. Cambodia will apply for Gavi funds for HPV vaccine introduction by either September 2018 or January 2019.

The WHO Regional Office for the Western Pacific is providing technical assistance to countries and areas to improve new vaccines surveillance including rotavirus and pneumococcal diseases, assists with plans for introduction of HPV vaccine and rotavirus vaccine in Lao People's Democratic Republic and Solomon Islands, monitors and evaluates Cambodia's HPV vaccine demonstration project, and supports the introduction of PCV in Mongolia's capital province in 2018 and the rest of Mongolia's provinces during 2018-2019. The WHO Regional Office for the Western Pacific is also collaborating with partners to promote uptake of new vaccines in a timely and equitable manner, while working to identify ways to increase new vaccine introduction in upper middle-income countries.

2.7 Meeting regional vaccination coverage targets

PROGRESS AND ACHIEVEMENTS

Since 2009, the Region as a whole has sustained high coverage for both Diphtheria-Tetanus-Pertussis (DTP) and Measles-Containing Vaccines (MCV), and in 2017, the reported regional coverage for DTP1, DTP3, MCV1 and MCV2 were 97.8%, 97.3%, 97.4% and 95.7%, respectively.

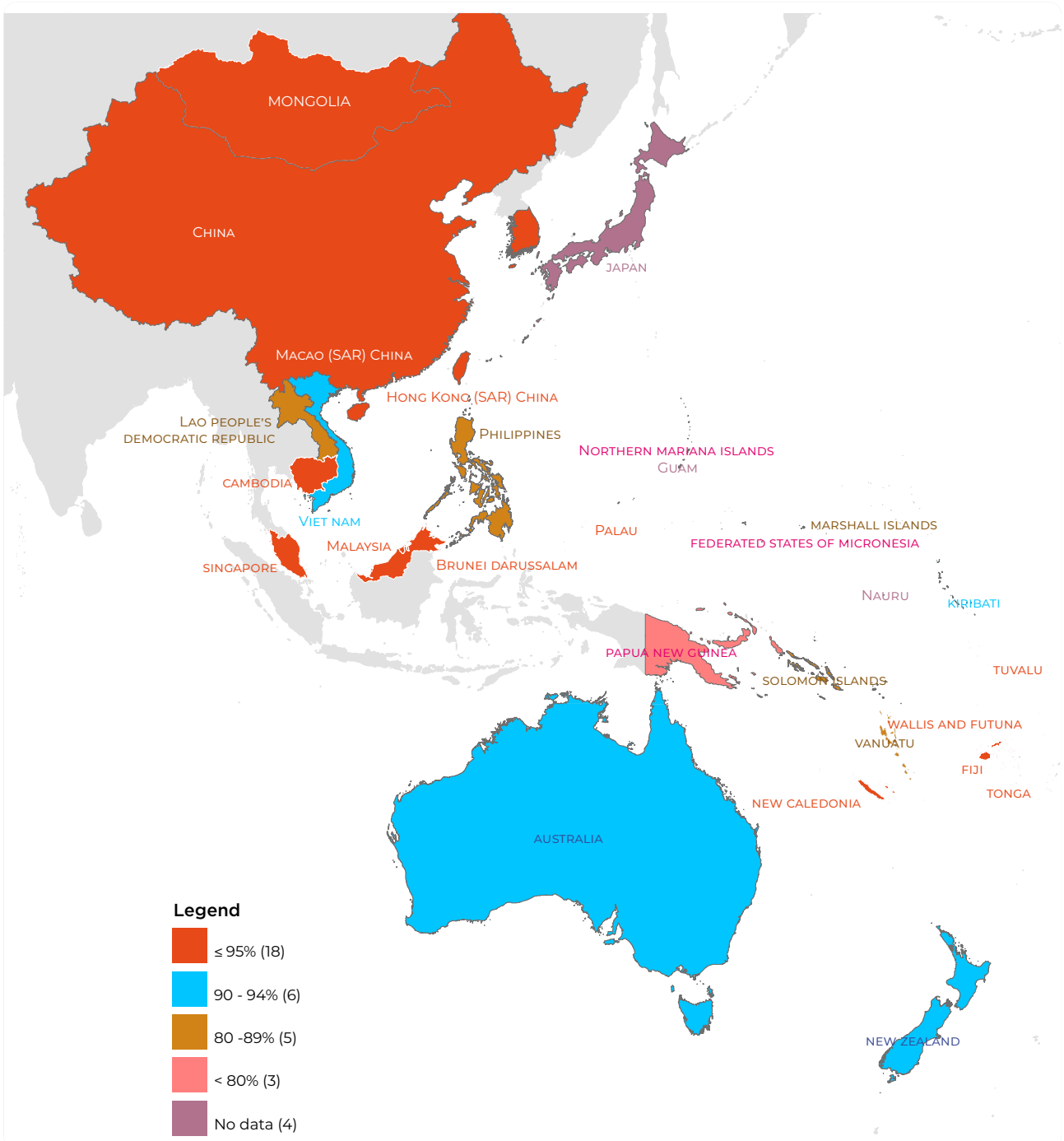
In 2017, 17 countries have reported national DTP3 coverage of ≥95%, while 24 countries have reported national DTP3 coverage of ≥90%. As of 2017, 12 countries and areas have achieved the regional target of national DTP3 coverage of ≥95% with all districts ≥90%. Seventeen countries and areas have reached ≥ 90% national DTP3 coverage with all districts ≥80%, which is the GVAP target by 2020. (Figures 4 and 5)

2.7.1 Remaining/emerging challenges

Vaccination coverage is still uneven across countries and unequal coverage persists among districts within the same country. Official coverage estimate of DTP3 is less than 80% in the Federal States of Micronesia (73%), the Northern Mariana Islands (69.5%) and Papua New Guinea (50%). DTP3 coverage is between 80%-90%, 85,3% in Lao People's Democratic Republic, 80% in Marshall Islands, 88% in the Philippines, 82,7% in Solomon Islands and 85% in Vanuatu. Coverage disparities reflect gaps in immunization services and underscore the need for careful evaluation of subnational level immunization services.

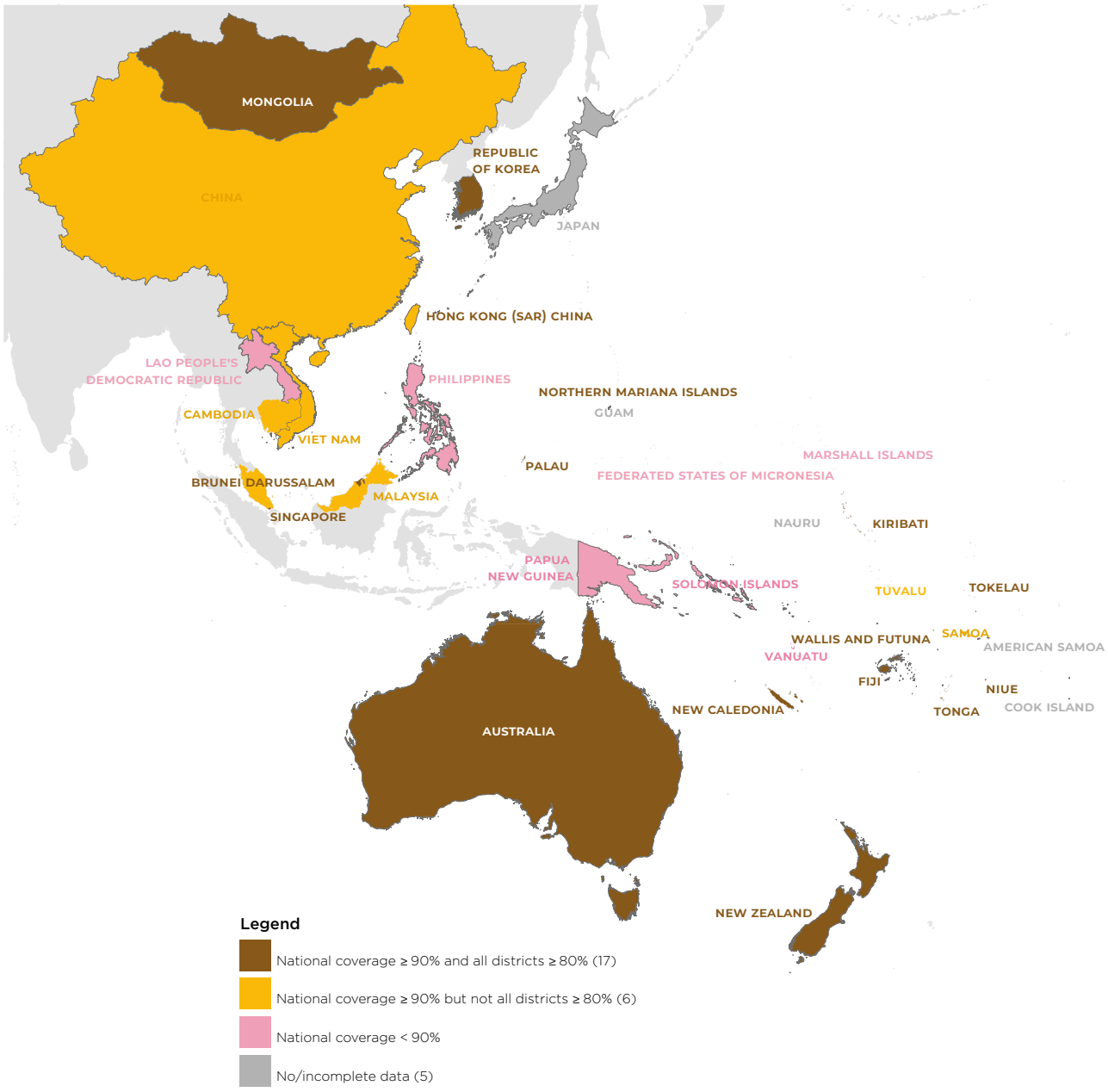
Sustaining achievements, such as high vaccination coverage and successful prevention and control of Vaccine Preventable Diseases (VPDs), in many countries and areas in the Region, during past decades, will be a challenge in coming years. This will include addressing reported vaccine access and supply issues (to include stock outs), and development of sustainable domestic immunization financing, particularly when donor support is decreasing.

Figure 4: Reported DTP3 coverage of 36 countries and areas in the Western Pacific Region, 2017



Source: WHO/UNICEF Joint Reporting Form (JRF) for immunization (data for 2017)
"Reporting coverage" refers to "Official country estimates" where available; if not available, "National administrative coverage" is used.

Figure 5: Reported DTP3 national and district-level immunization coverage of 36 countries and areas in the Western Pacific Region, (GVAP coverage targets), 2017



2.7.2 Responses and support to be provided by the WHO

Both countries and WHO have been made significant efforts in 2017 to address challenges and had significant progress to achieve the regional and global targets of immunization coverage, including: (i) having functional National Immunization Technical Advisory Groups (NITAGs) in China, Lao People's Democratic Republic, Mongolia, the Philippines and Viet Nam; (ii) conducting EPI reviews in Cambodia and Mongolia for supporting programme monitoring and evaluation to reshape better planning for future; (iii) expanding the use of tools and tailored approaches to enhance data management, analysis, and use of information for immunization coverage and VPDs; (iv) conducting VPD surveillance reviews in Lao People's Democratic Republic and Viet Nam to support integration process into comprehensive communicable disease surveillance and assess the impact of surveillance improvement efforts; (v) strengthening vaccine pharmacovigilance system including surveillance and response of Adverse Events Following Immunization (AEFI) in Cambodia, China, Lao People's Democratic Republic, Korea, Mongolia, Papua New Guinea and Viet Nam; and (vi) coordinating partners support,

particularly from Gavi for health system strengthening, cold chain equipment supply and new vaccine introduction.

The WHO Regional Office for the Western Pacific will continue supporting immunization system strengthening in the countries, specifically in: strengthening NITAGs to improve the capacity for evidence-based immunization policy making; conducting international EPI reviews and developing or updating cMYPs; identifying and systematically addressing issues on procurement, supply and distribution of vaccines; assessments of national regulatory authorities and developing and implementing institutional development plans; conducting in-country AEFI training workshops; developing immunization information technology guidance and building capacity to use information systems; and carry out high level missions with partners to priority countries for advocacy and to support key national immunization programme activities.

2.8 Accelerated control of Japanese encephalitis

PROGRESS AND ACHIEVEMENTS

Elimination of JE transmission is not possible due to the zoonotic cycle of infection. However, experiences in Japan and the Republic of Korea have demonstrated that the incidence of human disease can be reduced to very low levels by a vaccination programme with high coverage among young children.

Eight of the 12 countries with JE virus transmission areas in the Region have introduced JE vaccine in some (Malaysia) or all (Australia, Cambodia, China, Japan, Lao People's Democratic Republic, Republic of Korea and Viet Nam) JE risk areas; two countries (Brunei Darussalam and Singapore) have very low levels of disease without vaccination; one country (the Philippines) plans to introduce the vaccine nationally in 2018 or 2019; and one country (Papua New Guinea) continues to collect disease burden data before making a decision about potential introduction.

Photo: JE vaccination Campaign in Cambodia in 2016
(Source: EPI/WPRO)

2.8.1 Remaining/emerging challenges

Challenges to further progress and achievement of the accelerated JE control goal include the resource requirements for implementing wide age-range campaigns and national scale-up of vaccine introduction; the need for additional immunogenicity and safety data for co-administration of live attenuated or recombinant JE vaccine with MR or MMR vaccine; and the weakness of JE surveillance systems that are critical for estimating disease burden, defining target populations and monitoring progress.

2.8.2 Responses and support to be provided by WHO

JE surveillance data are important to define the burden and geographic range of JE and to monitor the impact of vaccination. Sentinel or national JE surveillance with laboratory confirmation has been established in all countries in the Region with known or suspected endemic JE transmission.

In July 2016, the TAG reviewed the targets proposed at the March 2016 JE expert consultation and recommended the following targets: 1) primary target: JE incidence <0.5 cases per 100 000 population in the targeted population in affected areas (national and subnational); and 2) intermediate target for Member States that do not have high-quality JE surveillance: coverage of ≥95% with primary JE vaccine series among the targeted population in affected areas. TAG also recommended that JE experts propose a timeline for achieving these targets.

The WHO Regional Office for the Western Pacific is developing Technical Guidance for Achieving Accelerated Control of Japanese Encephalitis in the Western Pacific, with a first draft having been shared with WHO Country Offices in the Region in April 2018.

The Second Consultation on Accelerated Control of Japanese Encephalitis in the Western Pacific Region was convened in May 2018 to: 1) review and discuss progress, current status and issues concerning accelerated control of JE; 2) discuss timelines for achieving accelerated control of JE in the Western Pacific Region that will be proposed to TAG; and 3) review and revise the draft Technical Guidance for Achieving Accelerated Control of Japanese Encephalitis

in the Western Pacific, which was submitted to TAG for their review. During the consultation, progress, current status and issues concerning accelerated JE control were reviewed. It was proposed that the Western Pacific Region should achieve accelerated control of JE by 2030. The participants provided input into the draft technical guidance for achieving accelerated JE control and the revised draft was submitted to TAG for their review in June 2018.

3. PROGRESS ON GVAP STRATEGIC OBJECTIVES

Western Pacific Region has given the highest attention to recommendations made in the SAGE 2017 assessment report. While all 12 recommendations are important, their priority relevance across the Region varies. While Annex 2 presented the progress of all 12 recommendations, the following section reports regional activities focusing on six selected priority recommendations which align with each strategic objective of GVAP to reflect the overall progress in the GVAP in the Region.

3.1 All countries commit themselves to immunization as a priority

➔ **SAGE Recommendation on MICs:** WHO regional offices should support MICs in their regions by leveraging all opportunities to promote the exchange of information, the sharing of lessons learned and peer-to-peer support.

WPRO SUPPORTED NITAG OF LAO PDR, WHICH IS A LMIC, TO STRENGTHEN NATIONAL CAPACITY TO FORMULATE EVIDENCE-BASED POLICIES THROUGH PEER-TO-PEER SUPPORT

In supporting NITAGs in the Region, WHO has been working to ensure that NITAGs fit well within the local decision making processes and work efficiently. Efforts have concentrated on strengthening operational capacity, such as developing terms of reference and standard operating procedures as well as building capacity in the specific skills used for evidence-based decision making.

Based on the request from Lao People's Democratic Republic, a study tour was organized for five delegates (including Chair and Deputy Chair of NITAG, EPI manager and two staff from NITAG Secretariat) to attend the meeting of Australian Technical Advisory Group on Immunization (ATAGI) in Canberra, Australia in February 2017. The Lao team has attended as observers at the two day ATAGI meeting where several recommendations on new vaccine introduction were discussed, including revision of immunization schedule and other important immunization related issues in Australia. At the end of the meeting, delegates from Lao People's Democratic Republic presented on their national immunization program and briefly introduced their newly established NITAG. A side meeting with ATAGI secretariat and Chair was also held at the Office of Health Protection, Department of Health and Ageing to discuss and learn about ATAGI as well as overall immunization program in Australia. Following this visit, the government as well as EPI team in Lao People's Democratic Republic realized the importance of independence of NITAG from Ministry of Health and decided to revise the membership of NITAG, including the Chair who was a government employer.

Photo: Delegates from Lao People's Democratic Republic meeting with Australian Technical Advisory Group on Immunization in Canberra, Australia, 2017 (Source: EPI/WPRO)

3.2 Individuals and communities understand the value of vaccines and demand immunization both as a right and a responsibility

➧ **SAGE Recommendation on Maternal and Neonatal Tetanus:** The immunization community should make concerted efforts to achieve maternal and neonatal tetanus elimination by 2020.

ACHIEVING MNT ELIMINATION IN THE PHILIPPINES THROUGH BUILDING ADVOCACY CAPACITY AND ENGAGING COMMUNITIES ON THE BENEFITS OF IMMUNIZATION AND THEIR CONCERNS

Maternal and Neonatal Tetanus differentially affects the poorest, most neglected and underserved populations, making the diseases an important indicator for health inequality. In the Philippines, work towards achieving maternal and neonatal tetanus (MNT) elimination started in the 1980s, but tetanus toxoid (TT) vaccine acceptance plummeted in the mid-1990s. (Figure 6) This was due to allegations by pro-life groups that the TT vaccine caused miscarriage and sterilization. These false perceptions not only had an effect on the TT supplementary immunization activities (SIA) but also extended to routine immunizations.

Figure 6: Reported Tetanus and Protection At Birth (PAB) Coverage Estimates, the Philippines, 2008-2016

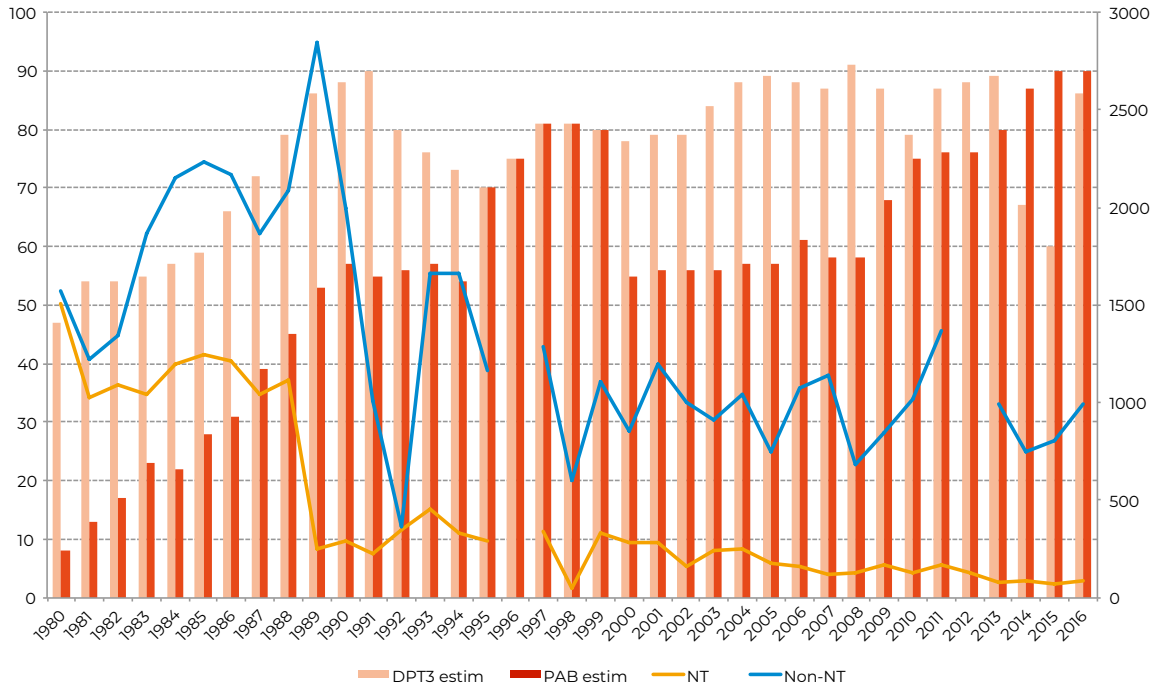


Photo: Delegates from Lao People's Democratic Republic meeting with Australian Technical Advisory Group on Immunization in Canberra, Australia, 2017 (Source: EPI/WPRO)

In 1999, UNICEF/WHO/UNFPA identified six countries of the WPR that had not achieved MNT elimination. The Philippines' MNT elimination activities only resumed in 2009. In February 2015, 16 of 17 regions of the Philippines were validated to have achieved MNT elimination. The Autonomous Region in Muslim Mindanao (ARRM) was the only region not to be validated, due to ongoing conflict and security reasons there at that time.

In November 2017, the Philippines became the most recent country validated to have achieved MNT elimination in the Region. This was a result of three rounds of successful tetanus diphtheria toxoid (Td) SIAs. The validation assessment using the standard WHO protocols for ARRM concluded that attainment of MNT elimination in the ARMM was achieved and by extension, to the whole of the Philippines. This represents an important step in the country's efforts to achieve universal health coverage and address health inequities.

3.3 The benefits of immunization are equitably extended to all people

➧ **SAGE Recommendation on Outlier countries:** WHO regional offices should work with countries experiencing the greatest difficulties in achieving GVAP goals to develop and implement multidimensional remediation plans, integrating existing national improvement plans.

PREVENT AND RESPOND TO MEASLES OUTBREAK AND BUILD CAPACITY FOR ENABLING EQUITABLE DELIVERY THROUGH SUPPORT INCLUDING PLANNING AND SECURING FUNDS IN PAPUA NEW GUINEA

After an outbreak of measles was detected in Papua New Guinea in 2017, bordering a province of Indonesia where there had been an ongoing measles outbreak, WHO Country Office and Regional Office worked closely with the MoH of Papua New Guinea to rapidly develop immunization response plans and obtain emergency funding from the Measles and Rubella Initiative outbreak response fund. An outbreak response immunization campaign was conducted in the affected province, which successfully halted the outbreak.

The risk of measles spread from the ongoing outbreak in neighbouring Indonesia to border provinces was considered high due to large numbers of measles-susceptible individuals in those provinces. WHO engaged in cross-regional dialogue between WPRO and SEARO, between the Papua New Guinea Country Office and the Indonesia Country Office, and between the Ministries of Health in Papua New Guinea and Indonesia to explore ideas for improved cross-border coordination of VPD surveillance and to coordinate planned immunization campaigns. Informed by this dialogue, a second phase of the outbreak response campaign was planned, to coincide with a planned MR campaign in Indonesia border provinces. WHO provided support to Papua New Guinea MoH to plan and solicit funds for this phase of the campaign. Following a series of large earthquakes in February and March 2018, WHO provided support to repair cold-chain infrastructure, intensify surveillance for vaccine-preventable diseases, support routine immunization service delivery, and to plan and implement an immunization campaign to protect children congregated in camps for internally displaced people.

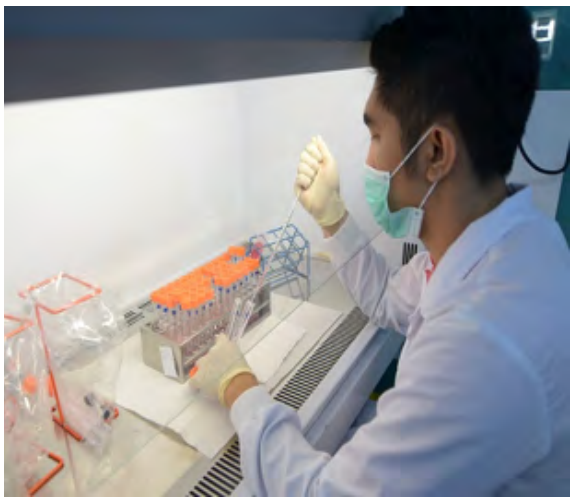
Finally, to prepare for a nationwide MR supplemental immunization campaign in 2019, WHO held a consultative workshop in March 2018 with staff from provincial and national MoH, UNICEF, local non-government organizations, and Gavi the Vaccine Alliance, to support development of the immunization plan of action, and the application for Gavi support for this campaign.

3.4 Strong immunization systems are integral part of well-functioning health system

➧ **SAGE Recommendation on Polio and communicable disease surveillance:** countries maintain effective poliovirus surveillance capacities, and build on the polio surveillance platform to strengthen communicable disease surveillance systems, especially for measles and rubella, and other vaccine-preventable diseases.

POLIO LABORATORY NETWORK AS A PLATFORM TO STRENGTHEN MONITORING AND SURVEILLANCE NETWORKS OF OTHER VPD IN THE WPR

The Global Polio Laboratory Network (GPLN) was established in 1990 with primary responsibility to distinguish poliovirus as a cause of acute flaccid paralysis (AFP) from AFP caused by other diseases. Following the model of GPLN, the Regional Polio laboratory Network (RPLN) was established in the Western Pacific in 1992 and included countries at every stage of the eradication initiative: countries with continuing widespread transmission and those that had established elimination of wild poliovirus. The RPLN has grown over the years, expanding to a total of 43 laboratories in 10 countries and areas with 41 laboratories certified to perform intratypic differentiation for rapidly distinguishing Sabin virus from wild poliovirus or vaccine derived poliovirus.



Expansion of laboratories with capacity for cell culture and molecular characterization greatly contributed to build laboratory capacity for other VPDs by utilizing the same infrastructure from polio laboratories. In resource-limited settings, existing polio laboratory structure have helped other VPD laboratory surveillance programmes to be set up within shared physical space, integration of laboratory functions and shared expertise of trained staff. Equipment is often shared within multiple departments in the public health institute and knowledge of one laboratory method can be applied in other diagnostics. Integration of surveillance programmes have also helped to better utilize samples collected where a differential diagnosis is often done to determine the cause of disease- acute meningococcal encephalitis surveillance where the causative agent can be either bacterial or viral pathogen or in case of differential diagnosis, of arboviruses such as Japanese encephalitis, Dengue or Zika.

Figure 7: Measles and Rubella Laboratory network in Western Pacific Region

Photo: Polio laboratory in the Philippines (SOURCE: EPI/WPRO)

The VPD laboratory network in the WPR continued to grow and in 2000, the regional measles and rubella laboratory network was established (Figure 7), following by Japanese encephalitis laboratory network in 2008 and rotavirus and invasive bacterial vaccine-preventable diseases in 2009. Currently, there are over 500 laboratories in the WPR that are part of VPD laboratory surveillance network, contributing to providing evidence of burden of disease and vaccine introduction, evaluation of diseases control, confirmation of outbreaks and strengthening quality assurance in participating laboratories.

3.5 Immunization programmes have sustainable access to predictable funding, quality supply and innovative technology

➧ **SAGE Recommendation on Vaccine access:** WHO regional offices and UNICEF should work with countries to identify and systematically address procurement and other programmatic issues affecting vaccine access.

WPRO SUPPORTS THE PHILIPPINES TO STRENGTHEN VACCINE SUPPLY CHAIN

Vaccine stock-outs in the Philippines have been observed in last several years and affected national and sub-national VPD coverage.

Recently, vaccine stock-outs of Pentavalent vaccine, IPV, bOPV and PCV13 have been reported. These stock-outs affect the EPI routine coverages, resulting in measles outbreaksin 2014 and 2018 as well as diphtheria and pertussis outbreaks in 2016 and 2017.

These vaccine stock-outs resulted from issues related in procurement, vaccine forecasting and distribution. The long decision-making process on whether to procure vaccines via UNICEF or local bidding has caused significant delay in procurement of vaccines. The WHO lead MIC strategy missions in November 2016 that have highlighted the priority attention of addressing identified issues and the Government of the Philippines has given its highest attention to the implementation of these missions' recommendations.

Figure 8: The Vaccine Stock-outs in the Philippines, 2008-2017

YEAR	VACCINE	LEVEL		NO OF MONTHS	REASON FOR STOCKOUT	MODE OF PROCUREMENT
		NATIONAL	SUBNATIONAL			
2008	BCG, MCVA	X		?		LOCAL
2012	BCG, Hep B, OPV	X	Hep B, OPV	Hep B (6 mos)		LOCAL (BCG, OPV)
2013	BCG, Penta, OPV, MCV, TT	X	Hep B	Penta (9 mos)		Mix
2014	Hep B, Penta	X		Penta (2 mos) Hep B (1 mo)	Stockout was caused by dib failure (Local Procurement)	LOCAL
2015	Penta	X	X	6-9 mos	Due to bid failures	LOCAL
2016	IPV, OPV, PCV13	X	X	IPV (6 mos) OPV (1mo) PCV18 (1 mo)		LOCAL
2017	IPV, OPV, PCV13	X		IPV (3 mos) OPV (3 mos) PCV13 (4 mos)		LOCAL

Source: Case Report: PHL VAccines Stock Out. Dr Sergev Djorditsa WPRO.2015

WHO Country Office of the Philippines conducted detail mapping of causes relating to each identified issue. One of the major reasons of poor vaccine management was due to lack of central staff of NIP. Additional staff is provided to support for vaccine management at national vaccine storage and data management in NIP. Delayed vaccine utilization, wastage and inventory report from the sub-national level significantly impacts vaccine procurement and distribution in the country. This information is critical for the NIP to create a realistic vaccine forecast and allocation plan. Therefore, technical support should be provided for proper calculation of vaccine procurement, guide for monitoring vaccines arrival at the national level and planning for vaccine distribution to regions. It is expected that these supports will greatly improve vaccine management practice in the Philippines.

3.6 Country, regional and global research and development, innovations maximize the benefits of immunization

➧ **SAGE Recommendation on Technical Capacity Building:** WHO regional offices should work with regional and global partners to support national technical capacity-building, adopting a multidimensional approach and leveraging regional and national institutional capacities and expertise as well as global tools and resources

PARTNERING BETWEEN THE UNITED STATES CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC) AND WHO TO IMPROVE TIMELY BIRTH DOSE COVERAGE IN SOLOMON ISLANDS TO IMPROVE PROGRAMME EFFICIENCIES AND INCREASE COVERAGE AND IMPACT

In 2016, Solomon Islands conducted a nationally representative hepatitis B serosurvey with results showing a high prevalence of over 3% in children. With hundreds of islands and single healthcare providers attempting to meet the health needs of their catchment populations, Solomon Islands was the sixth country in the Region to show that using hepatitis B birth dose OCC can effectively and safely help break the cycle of vertical and horizontal hepatitis B transmission. Their seven-month OCC pilot increased timely birth dose coverage among facility births from 30% to 68% and among home births from 4% to 24%.

Photos: Immunization service delivery in Solomon Islands (Left) and Brown bag session on Hepatitis B at the Regional Office (Right) (Source: EPI/WPRO)

Having been awarded a grant by Gavi, the Vaccine Alliance to equip all health facilities with cold chain capacity by 2020, Solomon Islands' Ministry of Health is partnering with WHO, UNICEF and the US-CDC to expand their successful pilot study to three provinces for all health facilities that lack cold chain and for home births. This joint and collaborative OCC scale-up project is meant as a temporary stop gap for health facilities that lack cold chain capacity, allowing healthcare providers the ability to safely provide a hepatitis B birth dose while awaiting cold chain capacity by 2020. Lessons learned from this scale-up activity are being keenly followed by other countries considering potentially offering birth dose OCC to remote communities and hard to reach areas where either health facilities or home outreach is limited.

4. WAY FORWARD

The WPR progress is in line with the DoV Goals at the global level, with tremendous efforts to achieve both GVAP Strategic Objectives and regional immunization goals that follow:

- **Sustaining polio-free status:** All countries in the region have successfully maintained its polio-free status since certification in 2000.
- **Maternal and neonatal tetanus elimination:** All countries except Papua New Guinea have achieved MNT elimination in the Region.
- **Measles elimination:** Currently six countries and two areas are verified as having achieved measles elimination (interrupted endemic measles virus transmission for more than 36 months) from 2014 to 2017.
- **Accelerated control of hepatitis B:** 24 countries and areas as well as the Region as a whole have serosurvey evidence of having achieved the 2017 hepatitis B <1% target among 5 year old children. This has been verified for 21 countries.
- **Rubella elimination:** All countries have introduced RCV in routine immunization programmes. In 2017, the first two countries (Republic of Korea and New Zealand) in the Region were verified to have achieved rubella elimination.
- **Introduction of new vaccines:** The WPR is on track with new vaccine introduction overall. Eleven low/middle income countries in the Region have introduced at least one new vaccine in the routine immunization schedule since 2010 (three countries had introduced all vaccines classified as new vaccines prior to 2010).
- **Meeting regional vaccination coverage targets**: Since 2009, the region has sustained >95% coverage with 3 doses of DTP3 vaccine. In 2017, the regional DTP3 coverage reached 97.8%. Twenty four countries and areas reached the GVAP target of DTP3 ≥90% coverage by 2017, with 18 countries and areas having reached ≥95% coverage of regional target of RF by 2017.

  Accelerated control of JE: Eight of the 12 countries with endemic JE transmission have introduced JE vaccine in some or all JE risk areas.

The commendable commitment by the governments and partners continued support are key factors to helping to make this steady progress. Despite these achievements, WPR still has to address a few fundamental challenges:

- Timely reaching of regional immunization coverages targets by 2020 by countries and across egion resulting from challenges in immunization service delivery such as limited human resources, limited evidence-based decision making and concerns with vaccine safety, particularly with new vaccines due to limited vaccine pharmacovigilance capacity.
- Uneven immunization coverage, particularly at subnational levels, which lead to population immunity gaps and result in outbreaks (e.g. measles, rubella and diphtheria).
- Gaps in VPD surveillance and immunization coverage monitoring, which challenge monitoring immunization programme and timely response.
- Ensuring adequate vaccine access and supply and uninterrupted supply of vaccines at both national and subnational levels that result from complexity of forecasting, procurement, financing and distribution, particularly in resource-limited MICs and Pacific Island Countries.
- Developing sustainable domestic immunization financing and resource mobilization to offset the anticipated decrease of donor support, particularly to MICs. In October 2017, the 68th Regional Committee for the Western Pacific endorsed "sustainable financing for essential public health functions - transition to domestic financing" which is expected to further support countries in strengthening their commitment to immunization.

The Region looks to increase focus on strengthening all core-components of immunization systems and immunization programmes, including routine immunization, accelerated disease control and new vaccine introduction to address the aforementioned challenges. In addition, the Region will continue all their current efforts to implement SAGE recommendations from their 2015-2017 assessment reports and thereby accelerate progress towards achieving regional and global immunization goals.

ANNEX 1

TABLE 1 PROGRESS TOWARDS THE REGIONAL FRAMEWORK IMMUNIZATION GOALS (USING INDICATORS AS GIVEN IN THE REGIONAL FRAMEWORK)

IMMUNIZATION GOAL	INDICATORS AND TARGETS	REGIONAL PROGRESS (AS OF 30 MAY 2018)
1 Sustaining polio-free status	› Sustain regional polio free status until global certification.	On track.
	› Ensure timely detection and response to any wild, vaccine-related and Sabin polio-viruses.	On track.
	› Eliminate vaccine-derived poliovirus (VDPV) risk by introducing in OPV-using countries at least one dose of IPV by end-2015, and withdraw the type 2 component of trivalent OPV by April 2016.	On track. › Due to the global supply constraint of IPV two countries (Mongolia and Viet Nam) will not be able to introduce IPV vaccine into routine immunization until 2018.
	› Initiate and implement the other phases of the poliovirus laboratory containment.	Delayed. › Certification of containment of poliovirus essential facilities has not yet started (Phase II). Ongoing - implementation of the Phase I for identification of Sabin 2 polioviruses has started in April 2018 with publication of WHO guidance document to identify poliovirus potentially infectious materials that may contain Sabin type 2 polioviruses in non-polio laboratories.
2 Maternal and neonatal tetanus elimination	› By 2015, achieve maternal and neonatal tetanus elimination in the Western Pacific Region, defined as <1 neonatal tetanus (NT) case/1000 live births in each district.	Delayed. › PNG is the only remaining country in the region yet to achieve MNT elimination. TT SIA is underway in Papua New Guinea and the first round of the campaign has been conducted in Jiwaka, Madang and Hela provinces.
	› Maintain elimination in every country and area (based on annual WHO/UNICEF District Data Spreadsheet).	On track. › NT cases, TT coverage and other indicators are reported on regular basis to national level and also reported in the Joint WHO/UNICEF Reporting Forms.
3 Measles elimination	› By 2012, the Western Pacific Region should eliminate measles.	Delayed. › In 2012, the Western Pacific Region achieved historically low measles incidence. However, the Western Pacific experienced region-wide measles resurgence in 2013-2016.
	› National Verification Committees should annually submit progress reports to the Regional Verification Commission describing progress towards measles elimination	On track. › Since 2013, NVCs started submission of progress reports to the Regional Verification Commission describing progress towards measles elimination. For the 6th RVC meeting in September 2017, all NVCs of 16 countries and areas in the Western Pacific Region and Sub Regional Verification Committee for the Pacific submitted progress reports.
4 Accelerated control of hepatitis B	› Reduce the seroprevalence of chronic hepatitis B infection, measured through hepatitis B surface antigen (HBsAg), to less than 1% in 5-year-old children by 2017. *[Note: In 2016, the WHA adopted WHO's Global Health Sector Strategy on Viral Hepatitis, calling to eliminate viral hepatitis as a public health threat by 2030 by decreasing the HB-sAg prevalence in children to 0.1% by 2030]*	**On track.** › A 2016 Vaccine study that was endorsed by the WPRO Hepatitis B Expert Resource Panel showed the Regional prevalence of HBsAg among children born in 2012 was estimated to be 0.93%, indicating that the 2017 target of reducing HBsAg in children ≥ 5 years to <1% was met.

5 Rubella elimination	› All Member States that have not yet introduced rubella-containing vaccine in their routine immunization programmes should do so as soon as possible.	On track. › Before 2017, all countries and areas had introduced RVC into the national immunization programme.
	› Rubella case-based data should be submitted to the WHO Regional Office for the Western Pacific.	On track. › All of 36 countries and areas in the Western Pacific Region have developed and run rubella case-based surveillance. 33 out of 36 countries and areas in the Region submit rubella case-based data to WPRO.
6 Introduction of new vaccines	› All low- and middle-income countries introduce one or more new vaccines during 2010 to 2020.	On track. › Of 18 middle-income (10 are lower middle-income) countries, three (one Lower middle income country and two upper middle-income countries) had introduced all new vaccines (Hib, HPV, JE, PCV, rotavirus vaccines) except JE vaccine (because neither country has endemic JE transmission) by 2010. › Of 15 middle-income (nine lower middle-income and six upper middle-income) countries that had not introduced all new vaccines by 2010, 11 (73%) have introduced at least one new vaccine since 2010; eight (89%) lower-middle income countries introduced at least one new vaccine since 2010; only three (50%) of upper middle-income countries introduced at least one new vaccine since 2010.
7 Meeting regional vaccination coverage targets	› Reach >95% national coverage for all vaccines used in the national immunization programmes, unless otherwise recommended, by 2020.	In Progress. › While the WP Region as whole has achieved 97.3% DTP3 coverage, there are disparities among countries. › 17 of 36 countries and areas have achieved national coverage of ≥95% DTP3 in 2017, and additional seven countries achieved ≥ 90% national coverage.
	› Reach >90% coverage in every district or equivalent administrative unit for all vaccines used in the national immunization programmes, unless otherwise recommended, by 2020.	Slow Progress. › 12 countries and areas have achieved DTP3 coverage ≥90% in all districts, which is a slow improvement compared with 10 countries in 2016 showing that disparities at subnational level are declining.
8 Accelerated control of Japanese encephalitis (JE)	› Accelerate the control of JE by extending vaccination to all JE risk areas where JE incidence exceeds very low levels.	On track. › Ten of 12 countries with endemic JE transmission have introduced JE vaccine in some (Malaysia) or all (Australia, Cambodia, China, Japan, Lao People's Democratic Republic, Republic of Korea and Viet Nam) JE risk areas or have very low levels of disease without vaccination (Brunei-Darussalam; Singapore). Of the two remaining countries with JE virus transmission risk, the Philippines is planning a subnational JE vaccination campaign in 2018 or 2019 and plans to introduce JE vaccine nationally before 2020. Papua New Guinea will assess its JE burden after which it will make a decision about if and when to introduce JE vaccine.
	› Reach regional vaccination coverage targets with the primary series of JE vaccine in routine immunization programmes, and ≥90% coverage for a primary series of JE vaccine among children under 15 years old in each country's JE risk area overall, by a year to be determined.	On track. › Of the eight countries in the Region that have JE virus transmission risk and which have introduced JE vaccine, six reported JE vaccination coverage in the 2016 JRF. Coverage for the primary series was ≥90% in four (68%) of countries (median: 96.2%; range 43.8%-100%). At the 2016 TAG meeting, an intermediate target for Member States that do not have high-quality JE surveillance was recommended: coverage of ≥95% with primary JE vaccine series among the targeted population (typically children <15 years old) in affected areas (national and subnational): ≥95% with primary series among children <15 years. At the Second JE Consultation on Accelerated Control of JE in the Western Pacific Region, held in Manila in May 2018, 2030 was proposed as the year to achieve this target.
	› Consider an incidence target of less than 0.5 per 100 000 children under 15 years old in every national or subnational JE risk area, by a year to be determined.	In progress. › At the 2016 TAG meeting, an incidence target of <0.5 cases per 100,000 in the target population (typically children <15 years old) in affected areas (national and subnational) was recommended. At the Second JE Consultation on Accelerated Control of JE in the Western Pacific Region, held in Manila in May 2018, 2030 was proposed as the year to achieve this target

ANNEX 2

PROGRESS OF 12 RECOMMENDATIONS BY SAGE IN WESTERN PACIFIC REGION

RECOMMANDATIONS	REGIONAL PROGRESS
Broadening the dialogue	In the WPR, immunization is fully aligned and integrated with health systems strengthening, universal health coverage, global health security and international health regulation.
Funding transition	The contribution of Global Polio Eradication Initiative and Gavi the Vaccine Alliance in the Region is significant and necessarily played a major role in supporting countries achieving immunization goals. The region is preparing for the transition from donor support to domestic fund and in October 2017, RCM endorsed a resolution on endorsed "sustainable financing for essential public health functions - transition to domestic financing".
Polio and Communicable disease surveillance	The regional polio laboratory network is fully integrated and linked to support other vaccine preventable diseases and functioning well. (Refer to Section 3.4)
Outlier Countries	Due to the complex challenges in Papua New Guinea and access and limited resources in Pacific Island Countries are at the highest priority attention of WHO and also partners, providing intensified support to overcome challenges and to focus immunization services to reach immunization goals are crucial. (Refer to Section 3.3)
Marternal and neonatal tetanus elimination	This is a high priority, as the Region is near close to the regional elimination status. WHO with partners are working closely with Papua New Guinea which is the only country in the Region to not yet have achieved MNT elimination by 2020. (Refer to Sections 3.2) Improving safe injection practices in immunization and in hospitals and reducing unsafe deliveries had a significant contribution in achieving MNT elimination target in the Region.
Displaced, mobile and neglected populations	Displaced and mobile population are not reported as national level burden; however, at subnational level this has been raising concerns with focused and ongoing activities targeting urban poor and ethnic minority groups in some countries.
Acceptance and demand	Overall vaccine acceptance and demand throughout the Region is high, evidenced by high regional immunization coverages (e.g. regional DTP3 coverage in 2017 was 95%). However, there have been concerns of vaccine hesitancy in some countries and reasoning safety issues and some anti vaccines group activities (particularly using social media). Proactive communication aiming building trust on vaccines and immunization is one of the priority activities carried out by countries with support from WHO and UNICEF. In 2017, WPRO conducted a regional workshop on vaccine safety communication to build capacity among national stakeholders.
Civil society organizations	In the WPR, Civil Society Organizations (CSOs) play different roles and engagements in providing immunization services and in control and prevention of VPDs. Their involvements depend and vary by country. Immunization service delivery support by the Catholic Health Services in Papua New Guinea and Polio outbreak response social mobilization activities carried out by Lao Front National Construction in Lao People's Democratic Republic are examples of CSOs active engagement in national immunization programmes in this Region.
Technical capacity-building	The WHO Regional Office for the Western Pacific and Country Offices are continuing to provide national and also subnational technical capacity building in many aspects, including evidence-based decision making, data management, disease and laboratory surveillance, new vaccine introduction, outbreak response, vaccine management, safety, advocacy and communication. (Refer to Section 3.6)
Vaccine access	In 2017, nine countries reported 24 vaccine stock-out events at national and/or sub-national level which have caused interruption of immunization service delivery. The WHO Regional office for the Western Pacific has provided technical support to strengthen effective vaccine management functions including vaccine forecasting and distribution. (Refer to Section 3.5)
Vaccine supply	The WHO Regional Office for the Western Pacific is working closely with UNICEF and other partners to address vaccine supply issues. In this regard, the WHO Regional Office for the Western Pacific has completed a preliminary analysis of IPV demand forecasting in the Region up to 2030.
Middle-income countries	Nineteen countries in the region belong to the MIC category, representing approximately 85% of the regional population. WHO provides support through MICs strategy and also is focused on providing technical capacity building through peer-to-peer support and sharing of lessons learned. (Refer to Section 3.1)